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POLICY

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See inside back cover for additional information.

The issuance of this publication approved in accordance with NAVEXOS P-35.

NAVMED P-5088

CONTENTS

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An unusual front cover scene reveals folk dancing on the deck of the hospital ship USS *Sanctuary* (AH-17) at Buenaventura, Colombia, in Nov 1973. *Sanctuary* visited there for one month, to assist the people with local medical problems as part of the Navy's Project HANDCLASP. For further particulars, see page 6.

The photo on page 2 was taken at Nav Hosp Pensacola, Fla., during a visit in 1973, by the Surgeon General VADM Donald L. Custis, MC, USN (2nd from the right). CDR Louis U. Pulicicchio, MC, USN gave a briefing on improvements made in the hospital's intensive-care unit, to (from left to right): RADM Oscar Gray, Jr., MC, USN, CO, Nav Aerosp and Reg Med Cen; RADM Edward J. Rupnik, MC, USN, BUMED Code 4; CAPT J.S. Maughon, MC, USN (now retired); CAPT Neil V. White, MC, USN, CO, Nav Hosp Pensacola, and; RADM Philip O. Geib, MC, USN, BUMED Code 7. The new Pensacola Naval Hospital is scheduled for completion in 1975.

The continued support of the Illustrations & Exhibits, and the Photography Divisions of the Media Department, Naval Medical Training Institute, NNMC, Bethesda, Md., is gratefully acknowledged.

from the Chief

I am acutely aware of your own anxiety that health care service may be further compromised. I assure you that we who manage Navy medicine will do our utmost to provide that care, under high priority but to the extent of our increasingly limited resources.

Austerity and reduction in the defense force is one thing, but adjustment to an all-volunteer-force concept is especially difficult for the Medical Department. Congress has placed us in the categorically untenable position of having to compete with the civilian medical sector for that high priced commodity, the draft-free physician — yet dallies in providing us with the compensatory economic resources to do so.

Military medicine, and indeed our defense force, can be no better than Congress and the American people want it to be. Were we to have their full manifest support we would welcome the opportunity for renewal under an all-volunteer force, for with it comes a mandate for much needed change.

We are well along with short and long-range programs to accomplish this renewal. They feature more equitable pay scales for our health professionals; more economical utilization of physicians and dentists; more abundant and competent paramedical assistants; total replacement of obsolete facilities; automation of managerial and clinical

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The above excerpts were taken from the remarks of VADM Custis, MC, USN on the occasion of the Naval Hospital dedication at Groton, New London, Conn., on 21 Jan 1974.

services; functional reorganization of the Bureau of Medicine and Surgery for increased responsiveness, especially to the needs of our operational forces; ambitious scholarship subsidies, and the Armed Forces University for Health Sciences.

Simultaneously there are powerful elements in government who decry the added costs of such programming for what they claim is already a health-care system of such quality as to be discriminatory against the civilian medical-care consumer.

We are mindful too that military medicine is not alone in this turmoil. The civilian medical sector is under equal, if not more ominous challenge. While the exact profile of American medicine in tomorrow's society is not yet clear, it is sure to be different.

For our part, we have in Navy medicine a durable body of quality professionals determined to see this through, confident that our renewal is the more assured. We intend to build a system which provides such purveyor and consumer satisfaction as to assure its own continuous renewal — the prototype, balanced, corporate health-care system for all to emulate.

We are optimistic for we're motivated by the conviction that, headlines notwithstanding, this is still a great nation. Détente or no détente, there simply is no alternative, in the present world to American leadership and strength. Such defense strength *can* be built on volunteers, if our people really want it. And absolutely fundamental to an all-volunteer force is the assurance of quality medical care.

Doctor Schlesinger, in a recent address, quoted the Psalmist: "Where there is no vision, the people perish." Unfortunately there remains a loss of common purpose in our society born of disenchantment, devisiveness and self flagellation. It needs to be restored, he said, so that we may once again enjoy what Felix Frankfurter once described as that "continuity of a treasured life which constitutes a civilization."

We who have spent our lives in the Navy know this all too well.

More specifically, what needs be emphasized is that now, as never before the quality and availability of Navy medical care is more than a BuMed problem, and more than a Navy problem. It is eminently a government problem, a congressional problem and ultimately an American problem.

EXECUTIVE MEDICINE PROGRAM

The previous CAPT Selectee Indoctrination course at the Naval School of Health Care Administration (NSHCA) is being replaced by the Executive Medicine Program.

BUMED desires a program to enhance management education on the basis of training and experience, upgrading both the Medical Corps, and Medical Service Corps. From the new course should flow heightened interest in Executive Medicine, and potential nominees for other management courses leading to a master's degree.

H.R.2-NNMC CONSTRUCTION INTERFACE

Selection of the National Naval Medical Center (NNMC) Bethesda as the site for the Uniformed Services University of Health Sciences will have obvious impact on the programmed redevelopment of the NNMC. A master planning effort will be coordinated with the Center redevelopment master plan.

To gain and maintain the momentum of the construction program at the Center, and in other areas as well, the NNMC projects programmed for FY-75 (and beyond) must be started in their selected program years.

POSTOCCUPANCY VISITS

Look for postoccupancy visits to newly constructed naval hospitals approximately 8-12 months after the hospital is occupied and functioning, essentially following a year's shakedown. Purpose is to determine the propriety of design concepts and functional utility of new construction, and to identify problems in design or function.

NATOP MANUAL FOR OPNAV

The interface of Aerospace medical personnel at the Headquarters and Laboratory management levels impacts on the development, test, and evaluation of Aircrew Life Support Equipment. Coordination/additional duty/management/liaison levels of BUMED, OPNAV, NAVAIR, and NAVMAT are involved in Aerospace Medicine.

There is a need for timely inputs of biomedical, bioengineering, and human-factors data and requirements, to assure effectiveness of life support protective, survival and rescue equipment. Equipment must operate within human tolerance parameters established by biomedical research, without degrading crew efficiency and performance.

The Naval Air Training and Operating Process Standardization Program (NATOP) Manual for OPNAV reflects unique coordination of much knowledge, effort, and expertise.

STATUS OF INTERNSHIP FOR FY 1975

Meeting of Intern Program Directors (from San Diego, Oakland, Bethesda, Philadelphia and Portsmouth, Va.) and Staff Representatives from the Family Practice Programs (at Jacksonville, Pensacola, Charleston and Camp Pendleton)

was conducted 2-4 Jan 1974 at BUMED . . . to select candidates for next year's Intern Program, and for certain First-Year Residencies (Pediatrics, Pathology, Psychiatry, and Family Practice). Candidates recently considered will receive their degrees in 1974, at their respective medical or osteopathic schools.

Total number of applications was 260, for 183 planned billets. Generally, the applicant quality was considered excellent. Most candidates desired straight or major-emphasis programs in Medicine and Surgery . . . . Rotating "O" programs continue to be popular.

Some subsidized students (MOSP, H.R.2, and SMSP) may not receive Navy internships because a large number of subsidized students applied only for the popular programs, overloading the demand for a limited number of billets.

Remaining vacancies may largely be filled by late applicants, or by direct negotiations after results of the Matching Plan are announced on 8 Mar.

ST. ALBANS HANGS ON

By Congressional mandate, previous Shore Establishment Realignment (SER) planning for Nav Hosp St. Albans, N.Y., has been reversed . . . . Operation of the hospital is insured throughout the remainder of FY-74.

O & M FUNDING STATUS

Congressional action is not yet complete on O & M appropriation for the current fiscal year . . . action on supplemental requirements is pending.

Reduction of $11.0 million imposed on CHAMPUS.

USS TARAWA (LHA-1) LAUNCHED

The LHA-1 Class is not a hospital ship. It is a casualty receiving and treatment ship of maximum capability, consistent with modern medical procedures and technology. The LHA-1 Class will significantly increase the quality and quantity of combat casualty care available to fleet operations.

USS Tarawa (LHA-1) was launched on 1 Dec 1973 at the Litton/Ingall West Bank facilities of Pascagoula, M.I. Active commissioning of Tarawa is projected for March 1975.

Constructed by new modular/assembly technologies, the ship will provide a modern triage area, four operating rooms (capable of major surgery), dedicated recovery/intensive-care facilities, and up to 300 convalescent beds.

NEW EXPERIMENTAL PARASITOLOGY LAB

The Naval Medical Research Institute (NMRI), NNMC, Bethesda, dedicated its new Experimental Parasitology Lab facility on 19 Dec 1973.

The new facility represents the center of the Navy's experimental parasitology research in the U.S., and will actively collaborate with Naval medical research units (NAMRUs) throughout the world.

Staffed by ten senior investigators and various skilled technicians, the Experimental Parasitology Division at NMRI is headed by CDR Joseph Cassells, MC, USN.

Project HANDCLASP and USS SANCTUARY

"Good will" was the message, and good medicine the mission during the USS *Sanctuary's* recent cruise to Buenaventura, Colombia, and Port-au-Prince, Haiti.

Sailing in support of the Navy's "Project HANDCLASP," the hospital ship provided health care to more than 5,000 patients during the 75-day voyage. Colombians and Haitians of all ages were admitted for treatment. Over 3,000 medical patients and nearly 2,000 dental patients were evaluated and treated. Surgical operations were performed on board for 150 patients. More than 4,000 prescriptions were issued by the pharmacy.

The medical and dental personnel of the USS *Sanctuary* worked closely with their Colombian and Haitian counterparts, sharing knowledge and experience. Special

WELCOME ABOARD.—Girls from San Raphael School in Colombia board the USS *Sanctuary* for dental examinations in the ship's clinic.

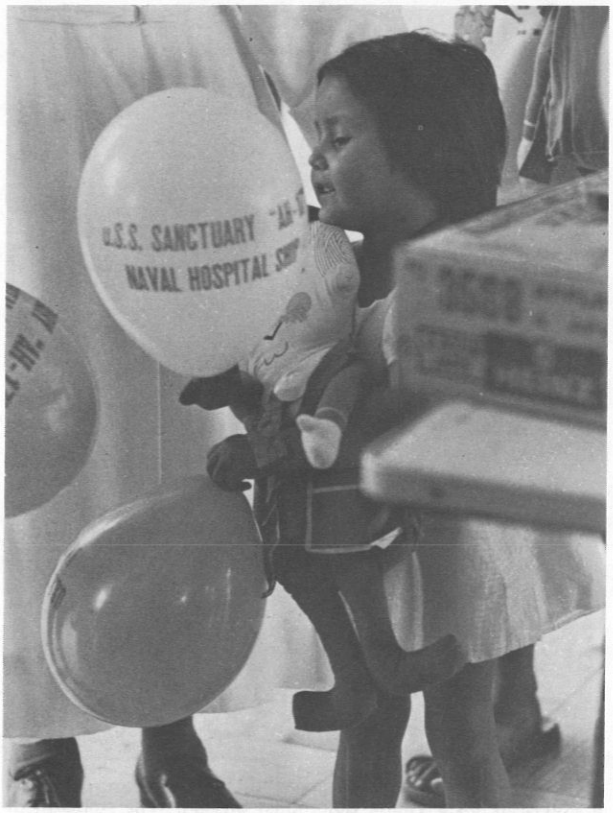
PEARL OF THE PACIFIC.—A folk group, "Perla del Pacifica," sings and dances on the deck of the USS *Sanctuary* to welcome the Navy hospital ship to Colombia. The ship's medical and dental personnel worked for one month with local health-care professionals, treating the citizens of Buenaventura.

FOR THE RECORD.—Mr. and Mrs. Tadeo Espinoza answer questions about the condition of their daughter, Marling, as LT Sue Searle, NC, USN, records their replies.

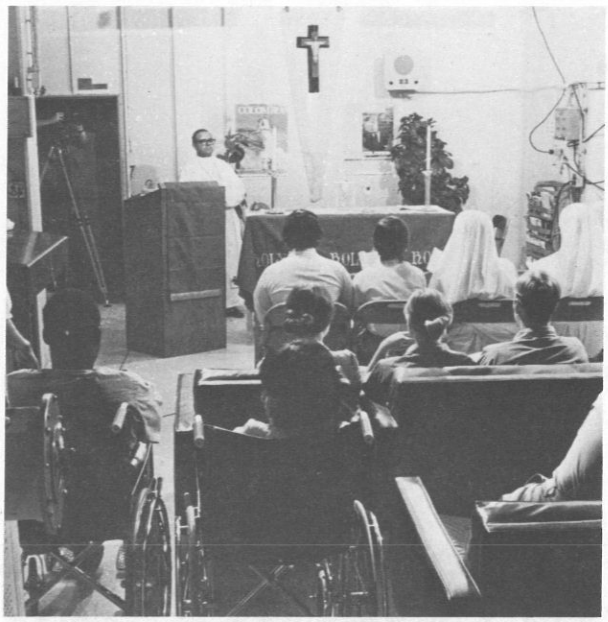
999 TO GO.—Yaneth Borrara listens while LCDR Michael Milford, DC, USN (right) tells her how to prevent cavities. Yaneth is the first of more than 1,000 youngsters seen in the dental clinic during the *Sanctuary's* month-long visit to Colombia. At left is Dr. Gerardo Yung Valero, a Colombian orthodontist.

SKIN GRAFT.—Navy surgeons in USS *Sanctuary* perform a skin graft on a young Colombian orphan. The ship's medical personnel worked closely with local physicians while treating patients referred by Santa Helena Hospital.

SANCTUARY SCHOOLROOM.—Nearly 300 women from Buenaventura, Colombia, attended child-health classes on board the USS *Sanctuary*. Seven sessions were held during the ship's good-will visit to the country.



JUST LIKE CHRISTMAS.—A child from the San Vincente Orphanage in Colombia holds toys given her by the personnel of the USS *Sanctuary.*



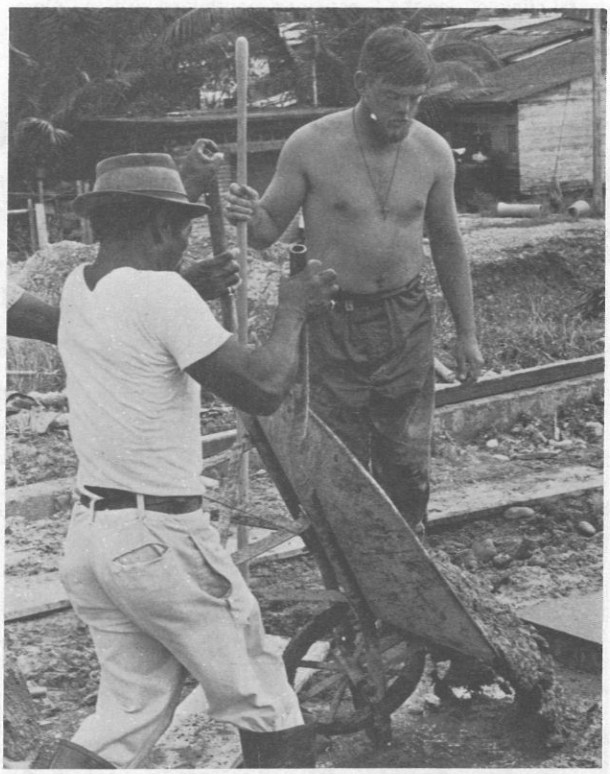
BISHOP OF BUENAVENTURA.—Bishop Heriberto Correa Yepes, Bishop of Buenaventura, Colombia, celebrates Mass aboard the USS *Sanctuary.* The Navy hospital ship spent one month in Colombia participating in "Project HANDCLASP."

training sessions were held with local health-care professionals. Lectures on good-health practices were open to anyone who wished to attend.

In addition to the medical care that was offered as part of "Project HANDCLASP," more than 300,000 pounds of supplies were distributed among 66 schools, hospitals, clinics, orphanages, prisons, and missions. The supplies included food, medicine, clothing, toys, sports equipment, books, and vegetable seeds. Twenty hospital beds were given to a home for the aged in Colombia, and a 200-bed field hospital was delivered in Haiti. *Sanctuary* crew members also donated $700 for the "HANDCLASP" mission.

An embarked Navy construction battalion (Seabee) team constructed a day-care center and a community center, renovated a crafts school, and built furniture for schools in Buenaventura. In Haiti, they dug an irrigation canal and completed a 68-foot viaduct. The Seabees also repaired a village water well, and conducted classes in firefighting and vehicle maintenance.

The good-will voyage marked the first operational deployment of a commissioned Naval vessel with a mixed crew of men and women.



BUILDING THE FUTURE.—A Navy Seabee (right) and a Colombian work together to pour a concrete slab for the floor of a day-care center near Buenaventura, Colombia. The Seabees came to Colombia with the USS *Sanctuary* as part of "Project HANDCLASP."

THE HEMATOLOGISTS' CORNER

Disorders of the Hemostatic Mechanism: Diagnostic Evaluation

By CDR Dominick N. Pasquale, MC, USN,
and
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One of the most perplexing problems which confront a physician is the evaluation of a patient who presents a disorder of the coagulation system — a failure of hemostasis, or thrombosis. Although the latter problem statistically occurs more often in clinical practice, the physician is most often concerned with failure of hemostasis since a true hypercoagulation syndrome is rather rare and difficult to diagnose. This brief review will primarily address the clinical and laboratory evaluation of bleeding disorders.

For convenience, the condition will be considered under two categories: a) the evaluation of a patient not actively bleeding, but who has either a prior personal or family history of a bleeding tendency, and; b) the emergency evaluation of a bleeding patient.

EVALUATION OF THE PATIENT WITH PRIOR PERSONAL OR FAMILY HISTORY OF BLEEDING

In this situation the importance of an accurate, detailed history cannot be overstressed. If the patient is too young to be reliable, the history should be obtained from an adult member of the family. It is important to determine the duration of the bleeding tendency, i.e., is it lifelong or recently acquired? The effects of surgical stresses, such as dental extractions and tonsillectomy, may contribute useful information in the proper assessment of a potential bleeding disorder. A moderately severe, or mild bleeding disorder may often exist, unrecognized until a surgical procedure has been undertaken. Following dental extraction, the time at which hemorrhage occurs is of clinical importance. During the first 24 hours, bleeding which is resolved with, or without packing and/or suturing, may be of no significance. Continued hemorrhaging may be important. Secondary hemorrhaging 4-6 days post-extraction may be due to a low-grade defect of classical hemophilia (factor VIII), or Christmas disease (factor IX), but this may be difficult to differentiate from the oozing which occurs as a result of local infection. It is well to remember that the bleeding manifestations in von Willebrand's disease are variable, and may not always occur after minor surgical procedures. One of the most frequent complaints in von Willebrand's syndrome is bruising, which is probably the most difficult symptom to evaluate, especially in women and

The opinions or assertions expressed herein are those of the authors and are not to be construed as official, or reflecting the views of the Navy Department or the naval service at large.

children. The location of bruised sites may be highly significant, as well as the size of the involved areas. Ecchymoses may represent a manifestation of any of the bleeding disorders, but petechiae are most suggestive of platelet or vascular disorders. Non-traumatic hemarthroses usually suggest coagulation-factor deficiencies. The menstrual history should be carefully obtained since menorrhagia may be the only clinical manifestation of von Willebrand's disease. The pattern of bleeding in the family members, and whether both sexes are affected, should be precisely determined. Medication history should also be emphasized.

A careful physical examination should be conducted, searching for evidence of liver disease, splenomegaly, and telangiectasia.

When the clinical evaluation is completed, one should be able to divide the patients into three main groups: a) definite bleeding tendency, b) probable bleeding tendency, and c) no bleeding tendency. It is at this point that the proper laboratory procedures should be selected.

LABORATORY INVESTIGATION

The laboratory investigation of a potential bleeding disorder should begin with a blood count, platelet count, and examination of a peripheral blood smear. The platelet morphology, the presence or absence of platelet clumping, and the numbers of platelets should be noted. A consideration of additional useful procedures follows.

Bleeding Time

The Ivy bleeding time, utilizing a template to produce standardized results is the preferred method. If one suspects von Willebrand's syndrome on the basis of the history, a normal bleeding-time test should be rechecked because of the known variability in this disease. The bleeding time test helps in the evaluation of platelet function and capillary integrity, but does not differentiate between the two.

Whole Blood Clotting Time

The many variables affecting this test, and its relative insensitivity detract from its usefulness. If it is used, the blood should be collected in plastic syringes with a thin-walled, 19-gauge needle (preferably by the two-syringe technique), after a clean venipuncture. Clean, dry, 10 x 75mm-glass tubes should be used, and the test should be carried out in a water bath at 37°C. The blood should be gently tilted and carefully observed for clot formation. The clotting time is prolonged when there is a severe deficiency of any coagulation factor except in thrombocytopenia, factor VII deficiency or factor XIII deficiency.

Activated Partial Thromboplastin Time (PTT)

This test is performed on plasma, obtained from whole blood, to which 3.8% sodium-citrate (one part sodium citrate to nine parts whole blood) anticoagulant has been added. In this test, the contact factors XII and XI are activated by a dilute kaolin suspension, in the presence of a prepared phospholipid substituting for platelet phospholipid. Its primary usefulness is as a screening device for factor VIII and IX deficiency and circulating anticoagulants, but it will be prolonged in the presence of significant deficiencies (10-20% of normal) of all the coagulation factors except platelet factor III, factor XIII, and factor VII. The test should be standardized and compared to controls. A PTT of ten or more seconds longer than the control is definitely abnormal. The activated test can be adapted to

TABLE I

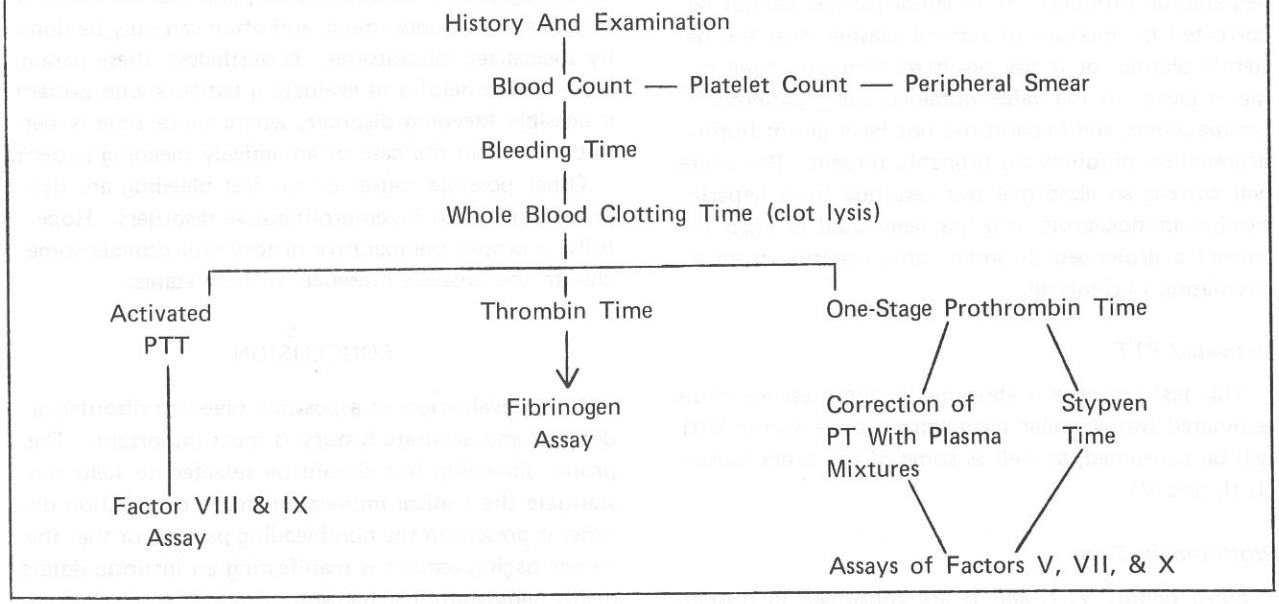
PROLONGED PROTHROMBIN TIME CORRECTION

Plasma Reagent Added	*Factor V Def.*	*Factor VII Def.*	*Factor X Def.*	*Circulating Anticoag.*
Normal Plasma	+	+	+	0
Absorbed Fresh	+	0	0	0
Aged	0	+	+	0

+ = Complete or almost complete correction
0 = No or very little correction

TABLE II

SCREENING PROFILE IN THE PATIENT WITH PRIOR PERSONAL, OR FAMILY HISTORY OF BLEEDING



a semiautomatic machine but this does not allow observation of the clot which forms.

One-Stage Prothrombin Time

This test is an indicator of the competency of the extrinsic system and, therefore, evaluates factors I, II, V, VII, and X while bypassing factors VIII, IX, XI, and XII. It will also be abnormal in the presence of a coagulation inhibitor.

If the one-stage prothrombin time is prolonged, one should follow the following procedure in order to pinpoint the defect:

1) Add equal volumes of normal plasma to the test plasma, and repeat the test. If it remains abnormal, a coagulation inhibitor such as an endogenous circulating anticoagulant, or heparin may be present.

2) Correction by the addition of one part normal plasma to nine parts of the test plasma, suggests a coagulation factor deficiency. At this point, various mixing studies can be done (see Table 1).

3) Normal plasma, absorbed with aluminum hydroxide should be added. This will contain only factors V and VIII. Correction now indicates factor V deficiency, and an assay for this factor should be carried out.

4) Normal serum which contains factors VII and X should be added to the test plasma. If the defect is corrected, a Stypven-time test using Russell's viper venom as a reagent, should be done on the test plasma. This venom directly activates factor X. If the latter test is normal, a factor VII deficiency is suggested. Specific factor assays should be done to confirm the suspicion.

In addition to the above, our laboratory routinely performs thrombin times and fibrinogen assays as part of the coagulation-screening profile.

EVALUATION OF THE ACTIVELY BLEEDING PATIENT

The bane of the physician is, perhaps evaluation of the patient who presents uncontrollable bleeding, especially in a surgical setting. Usually massive transfusions have already been given, and often an adequate history cannot be obtained, nor can a proper physical examination be performed. Vital questions must be resolved: Is the amount and type of bleeding commensurate with that which is expected in that particular setting; Is it due to a coagulation disorder, or; Is the bleeding due to dilution of factors resulting from the massive transfusion of bank blood? The following tests — in addition to an examination of the peripheral blood and a direct platelet count — may provide the answer.

Thrombin Time

This is a quick reliable test which helps to evaluate the adequacy and clotability of fibrinogen. It will be prolonged in the presence of heparin, hypofibrinogenemia (usually 70 mg/100 ml or less), and fibrin-degradation products. If an abnormal test cannot be corrected by mixture of normal plasma with the patient's plasma; or if the resultant thrombin time remains closer to the value obtained using patient's plasma alone, and heparin has not been given; fibrin-degradation products are probably present. Protamine will correct an abnormal test resulting from heparin. Epsilon-aminocaproic acid has been used *in vitro* to correct a prolonged thrombin time resulting from a circulating fibrinolysin.

Activated PTT

This test response is abnormal in the presence of disseminated intravascular coagulation, since factor VIII will be consumed, as well as some of the other factors (I, II, and V).

Prothrombin Time

Since factors V, I, and II are consumed in disseminated intravascular coagulation, the prothrombin time will be prolonged in the presence of this condition.

Tests for Fibrin-Degradation Products

A rapid kit utilizing a direct-latex agglutination-antibody technique is available, and it seems to be reliable in detecting fibrin-split products. The serial protamine sulfate dilution test is also useful.

In the latter test 0.2 cc of the patient's plasma is mixed with 0.2 cc of different dilutions of protamine sulfate (1/5 to 1/80), and is allowed to stand at room temperature for 30 minutes. Control plasma should be similarly treated for comparison. In principle, the test utilizes the highly charged protamine particle to cause polymerization of the fibrin monomer resulting from disseminated-intravascular coagulation. A positive test will result in gel or fibrin-strand formation. Platelet function is difficult to evaluate in this setting, and dysfunction may easily be missed. The tests of platelet aggregation, platelet adhesion, and platelet-factor-3 release are time-consuming, and often can only be done by specialized laboratories. Nevertheless, these parameters can be helpful in evaluating patients who present a possible bleeding disorder, where more time is permitted than in the case of an actively bleeding patient.

Other possible causes of surgical bleeding are dysproteinemia, and myeloproliferative disorders. Hopefully, a proper preoperative history will provide some clue to the possible presence of these states.

CONCLUSION

In the evaluation of a possible bleeding disorder, a detailed and accurate history is most important. The proper screening test should be selected to help substantiate the clinical impression that a coagulation disorder is present in the non-bleeding patient, or that the hemorrhaging patient is manifesting an intrinsic defect of his hemostatic mechanism.

SELECTED REFERENCES

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3. Blood coagulation and fibrinolysis in clinical practice, in Clinics In Haematology. London, WB Saunders Co Ltd, Feb 1973.

4. Williams, Beutler, Erslev and Rundles: Hematology: Part IV Hemostasis. New York, McGraw-Hill Book Co Inc, 1972.

CREDITS TO LCDR WILLIAM S. BARRY, MC, USNR

Attention is invited to CAPT Johnson's article, "Patient Transfer by Helicopter in Peacetime Environments," *U.S. Navy Medicine* 62:18-23, Nov 1973.

The author has requested that LCDR William S. Barry, MC, USNR, NROTC University of Michigan, North Hall, Ann Arbor, Mich., be cited as the original source of the diagram appearing on page 21, as well as the photographs appearing on page 22.

As Senior Medical Officer and Flight Surgeon of Branch Dispensary Cubi Point, U.S. Nav Hosp Subic Bay in the spring of 1973, Dr. Barry furnished a report on "Medical Evacuation Oxygen Equipment," cited in reference 3. Contained within that report were the diagram of the "Medical Evacuation Oxygen System," as well as six photographs illustrating a medical-evacuation oxygen resuscitation system. The illustrations provided by Dr. Barry were used as the bases of pages 21 and 22 in the publication.

Those who retain copies of *U.S. Navy Medicine* are asked to insert appropriate credits on pages 21 and 22, in accordance with reference 3 of the article.

Children's Dental Health Week

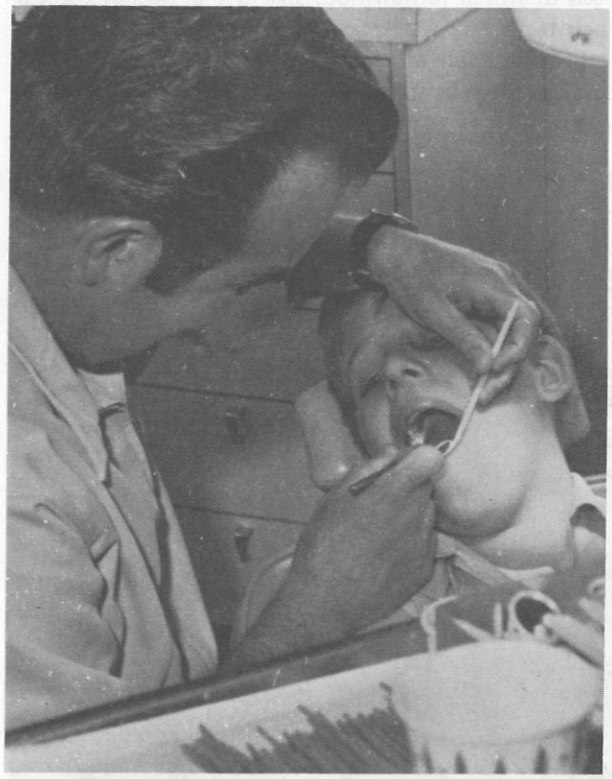
"Kick the Sweet Snack Habit" — that's the message hundreds of children will get this year as the Navy Dental Corps focuses its talents and energies on National Children's Dental Health Week, 3-9 February 1974.

During this week, Navy dental facilities throughout the world will conduct a special Preventive Dentistry Program designed to tell dependent children and their parents everything they need to know about maintaining dental health. Each child participating in the program will also receive a dental examination and a stannous fluoride treatment. This year, special emphasis will be given to establishing good eating habits during childhood. The "sweet snack" habit has been singled out for special attack; children will be encouraged to switch to nutritious snacks that do not damage their teeth.

Because adult attitudes and behavior toward dental care can often be traced to information and experiences

BOZO GIVES A HAND.—Bozo the Clown, star of a children's television show in Orlando, Fla., helps the Naval Training Center spread the word about dental health.

EVERYBODY SMILE.—Children at Lawton Elementary School flash their brightest smiles for visiting dental personnel from the Naval Training Center, Orlando, Fla.



PLAQUE ATTACK.—Dr. J.J. Miller examines Henry Boucher for plaque, evidence of decay, or other dental problems. Henry was one of the many children to visit the dental department of Marine Corps Air Station El Toro, with his school, as part of National Children's Dental Health Week.

acquired in childhood, the program educates children by providing dental facts in lively, interesting, and pleasant ways. Classroom discussions, television shows, movies, and posters are all used to spread the message of dental health.

Each child is talked to individually, and examined to determine whether any dental diseases or abnormalities are present. Results of the examination are reported to the child's parents.

Then each child receives a stannous fluoride treatment consisting of a prophylaxis with a special paste, followed by a topical application. Depending upon available facilities and the number of patients to be treated, the prophylaxis may be accomplished in groups, with the children brushing their teeth under close supervision. The prophylaxis may also be done individually by a dentist or dental auxiliary. A stannous fluoride dentifrice, accepted by the American Dental Association, will be provided or suggested for daily use.

The parents exert important influences in developing a child's attitude toward dental care and determining his state of dental health. Information for parents can be provided through talks to the Parent-Teacher Association, and similar groups. Newspaper articles and give-away pamphlets can also be used. When possible, parents can be invited to hear the instructions given the child.

KIRK THE CAVITY KILLER.—DT Kirk Lorraine, USN, protects a youngster's teeth with an application of stannous fluoride.

National Children's Dental Health Week is very popular with children, their parents, and participating dental personnel. In past years, Navy dental facilities have shown great imagination in developing entertaining, fun-filled, educational programs. The Naval Training Center at Orlando, Fla., regularly recruits Bozo the Clown, star of a local television show, to tell children about proper dental care. In a program sponsored last year by the local Naval Ammunition Depot, school children in the small Navy town of Hawthorne, Nev., were shown a film about dental care and were instructed in the proper way to brush their teeth. Youngsters in Santa Ana, Calif., were invited to visit the dental clinic at Marine Corps Air Station, El Toro for an examination by dental personnel. And in North Chicago, Ill., Navy dentists and dental technicians visited 11 public schools to impress students with the importance of developing and maintaining a good set of teeth.

Even though the activities of National Children's Dental Health Week require extra time and effort, Navy dental personnel find them professionally rewarding. The children enjoy a pleasant visit to the dentist, with a minimum of fuss or fear. Parents, too, may learn more about how to preserve or restore dental health.

The American Dental Association has sponsored National Children's Health Week for 26 years. This is the eighth year of Navy participation.

BRUSH YOUR TROUBLES AWAY.—Dawn Destree, a student assistant in the Dental Department of the Naval Ammunition Depot, Hawthorne, Nev., helps youngsters learn the right way to brush their teeth.

HELP YOURSELF TO HEALTHY TEETH.—Marilyn Barlow, a student aid at the Naval Ammunition Depot's Dental Department in Hawthorne, Nev., tells school children how to have healthy teeth.

BY PROCLAMATION.—North Chicago Mayor Leo F. Kukla (left) and Dr. William J. Burns, DDS, President of the Lake County Dental Association (right) look on as CAPT Wallace L. Talbot, Jr., USN, Commander, Naval Training Center, signs a proclamation naming one week in February as "Children's Dental Health Week" at Great Lakes, Ill.

Parenteral Hyperalimentation: A Beginning

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INTRODUCTION

The art of healing has been subjected to a thorough dissection in the last decade or so. It has been examined, inspected, scrutinized, eulogized, and popularized on television and in other communication media. One facet that has prompted countless studies is the area of patient care.

The cost of hospitalization is rising daily and there are many questions to be answered. Are we getting our money's worth? Is the patient actually receiving better care? Are we utilizing our present staff in the most efficient manner? These and other probing questions have revealed some paradoxical situations which are incompatible with modern medical techniques. One such area is the preparation of intravenous (IV) drug mixtures under adverse conditions, i.e., at the ward or nursing station. Other gaps in good patient care have been identified, as well as the need to match the service-to-be-performed with an individual's talent and training. Such considerations prompted the pharmacist to become more involved and to ascertain what additional services his profession could provide. He soon realized that he must accept an expanded role which is patient-oriented, rather than drug-oriented. From this base, he developed methods for better drug handling, i.e., the unit dose, the IV Additive Service, etc.; he instituted drug information centers, became involved in bedside care, and appropriately began to exercise all of the skills acquired in pharmacy school. Although these services were designed to facilitate patient care, the pharmacist soon discovered that his expanded role was rewarding and stimulating. Released from the narrow confines of his pharmacy, he has come to welcome the added impetus and perspective of greater clinical involvement. The older graduates had viewed the change with apprehension, feeling ill-equipped and rusty, but interested. The continuing-education program is slowly bridging this gap, and the interested are finding that their dormant skills can be revived. Among most pharmacists, the question that frequently arises is how involved should they become in these new changes. In many cases the lack of funds and personnel limit participation; however, the challenge should not be met with an "all-or-nothing" attitude, lest the profession falter and flounder through mounting entropy. The Joint Commission on Accreditation of Hospitals has recommended implementation of some of these innovations, and if action is not taken in the foreseeable future, accreditation of lagging hospitals could be in jeopardy.

The opinions or assertions contained in the above article are those of the author, and are not to be construed as official or reflecting the views of the Navy Department, or the naval service at large.

A conservative approach to the problem, which can be handled within the fund and personnel limitations of most hospitals, is herein proposed. Since the IV Additive Service has received the most emphasis, it is recommended that at least a limited program of this type be instituted. As a part of the overall IV Additive Service, the Hyperalimentation Program would provide the beginning. The equipment used, the manipulative skills learned, and the problems confronted would all form a solid foundation upon which the pharmacist could progressively build a complete program as funds and personnel become available.

Definition.

Intravenous (IV) hyperalimentation is a recently developed technique of achieving positive nitrogen balance, weight gain, and enhanced wound healing in adults; it represents the first successful method for supporting normal growth and development in infants whose nutrients are fed entirely by vein.[1] The process has also been termed prolonged total parenteral alimentation, or simply total parenteral nutrition (TPN).

Purpose.

The primary goal of IV feeding is to provide adequate nutrients, in proper quality and quantity, to meet the normal or increased metabolic requirements for growth and development, tissue repair, and recovery or convalescence. By reducing the mechanical and secretory activity of the alimentary tract to a resting state, the gastrointestinal system can repair itself, or recover from various pathological states under treatment. Spontaneous remissions of ulcerative colitis and regional enteritis have occurred during periods of treatment with TPN. Earlier fistula closures may become possible due to reduced gastrointestinal secretions.[1] The reversal of starvation accelerates healing, control of infection, drainage, and other postoperative complications. TPN has proven to be a valuable adjunct in cancer chemotherapy, often permitting therapy for weakened and undernourished patients who might otherwise fail to tolerate treatment. Parenteral feeding also tends to decrease the toxic effects of anticancer agents on the gastrointestinal tract.[2] A wide variety of uses for TPN, when the gastrointestinal tract cannot or should not be activated have evolved.

History.

The problem of maintaining the nutritional requirements of the human body through other than the oral route has troubled man for more than three centuries. It was in 1616 that William Harvey first described the circulation of the blood, and since that time, researchers and investigators have labored diligently to develop an adequate method of intravenous nutrition. In 1667, Jean Baptiste Denis performed the first documented transfusion of blood, from a lamb to a human being. Many practitioners subsequently followed his example, but the vast number of resulting complications and deaths quickly led to legal restraints on performing blood transfusions in man.[3] Throughout the 1700s and 1800s, parenteral therapy in animals gained increasing acceptance, and new techniques were developed with a moderate degree of success. In 1914, Henriques and Anderson demonstrated the use of intravenously injected hydrolyzed protein in animals; their achievement provided substantial thrust in the advance of intravenous nutrition as it is known today.[1] During World War II, researchers studied the effectiveness of parenteral infusions of casein hydrolysates in altering the postoperative loss of nitrogen in surgical patients. It was noted that neither nitrogen equilibrium, nor positive nitrogen balance could be uniformly achieved because of the limited number of calories that could be incorporated with the required nitrogen moieties.[1]

Adequate intravenous nutrition is limited by several factors. The volume of water which an adult can safely utilize is limited to approximately 35-50 ml. daily per kilogram of body weight. Another limitation is the inherent caloric density of the nutrient; four calories per gram of carbohydrate or protein, seven calories per gram of ethyl alcohol, and nine calories per gram of fat. The long-term intravenous use of ethyl alcohol is obviously unwise, and the parenteral administration of fat has produced fever, jaundice, and other complications. Studies have been undertaken recently to determine the feasibility of using a new fat emulsion in combination with other parenteral nutrients.[4] A third limitation is that the concentration of solute which can be infused into a peripheral vein without causing phlebitis or thrombosis is limited to 5% or 10% dextrose, a range of approximately twice the isotonic concentration.[1] Such concentrations, however, are inadequate. The hospitalized patient needs from 15 to 25 grams of nitrogen per day, and approximately 100-200 calories per gram of nitrogen are required for the proper utilization of the amino acids. Three liters of a 10% dextrose solution will only provide 1200 calories, far below that required in most cases. If calories are not supplied from a nonprotein source, the administered protein will be sacrificed to meet ongoing energy requirements, thereby sidetracking the amino acids from their primary objective, tissue synthesis.

It became obvious that the only way to provide adequate nutrition parenterally was to increase the concentration of the nutrients, and to develop a better

technique for the prolonged infusion of hypertonic solutions. Dudrick and co-workers provided the answer in 1965. By inserting a catheter into the superior vena cava, hypertonic solutions consisting of approximately 20 to 25% dextrose, 4% to 5% fibrin hydrolysates, and 5% additional solute containing all required vitamins, minerals, and trace elements were infused intravenously with dramatic success.[1] Utilizing this new technique, patients could be wholly supported by intravenous hyperalimentation; positive nitrogen balance, wound healing, weight gain, and increased strength and activity could be achieved.

THE HYPERALIMENTATION PROGRAM

This new and interesting program can provide the pharmacist with the necessary tools and skills to develop a complete IV Additive Program. To implement such a program, it is essential that the pharmacist understand the basic requirements of intravenous solutions, the equipment used, and the principal side effects and complications encountered. It is important to bear in mind that extensive ongoing research is being conducted; accepted procedures can be expected to change as the number and type of problems associated with this new technique are further explored.

Required Medications.

The type of patient undergoing hyperalimentation treatment usually presents a negative nitrogen balance or an increased excretion of urinary nitrogen, indicating a heightened protein metabolism. The daily nitrogen loss may be as high as 25 grams. To replace this deficit, protein hydrolysates or synthetic amino acids are administered. The hydrolysates are produced by the partial hydrolysis of fibrin, or as an enzymatic hydrolysate of casein. For patients who cannot tolerate the protein hydrolysates, the synthetic amino acids have been employed and appear more effective in some cases. These solutions provide the necessary amino acids to meet the daily requirement of 15 to 25 grams of nitrogen (85-140 grams of protein). The amount supplied can be regulated by the number of liters infused per day.

The nonprotein calories necessary for the optimum utilization of the amino acids are presently being supplied in the form of dextrose solutions. The caloric density of carbohydrate is four calories per gram, and a 20% or 25% solution will provide 800 and 1000 calories, respectively, per liter. The above combinations are supplied in kits by several manufacturers, or the solutions can be made locally in the pharmacy.[5] Different carbohydrate/amino acid ratios are difficult to obtain with some kits, thereby limiting their use. Evacuated plasma pooling flasks facilitate the manufacture of any combination.

Electrolytes, vitamins, and other essential elements must also be provided because the patient is usually taking nothing by mouth. The potassium requirements of a catabolic patient who has depleted his intracellular reserves of potassium are usually great. The primary intracellular cation, potassium leaves the cell when protein is broken down catabolically.[6]

Large amounts of potassium are required in hyperalimentation and are essential for weight gain and protein synthesis.[7] Sodium and magnesium must also be supplied. Potassium and sodium are usually added as the chloride salts. Since the amino acids are also precipitated as the chloride and/or hydrochloride salts, an excessive chloride load may result, and secondary metabolic acidosis may occur. This complication can usually be avoided by using sodium bicarbonate or lactate, and potassium phosphate or acetate.[8] Serum electrolytes should be provided daily until the patient is stable, then about every two or three days; appropriate amounts of phytonadione, cyanocobalamin, folic acid, iron, calcium, and phosphate are added as indicated by serum studies.[3] The commercially available protein hydrolysates and the crystalline amino-acid solutions do contain some electrolytes, but these are present in differing amounts. The pharmacist should be familiar with each type so that the total electrolyte intake can be accurately calculated.

Insulin is sometimes added to the bottled contents, to compensate for the time lag between stimulation and increased pancreatic secretion. The insulin dose is determined by the glycosuria produced. The loss of insulin by binding to the glass or plastic has concerned some investigators who recommend that the insulin be given separately, either intravenously or subcutaneously (vice addition into the bottle).

There has been considerable controversy concerning the need for vitamins in hyperalimentation therapy. It has been generally accepted that large amounts of ascorbic acid are required in wound healing, and that thiamine is essential for the proper utilization of glucose; however, the amounts and requirements for the other vitamins are being investigated. Vitamin A storage in well nourished individuals is of such magnitude that at least two or three years of severe deprivation would be required to bring about clear-cut deficiency symptoms and pathologic lesions.

On a diet essentially devoid of vitamin A, human volunteers showed slight evidence of deficiency after 1½ years.[9] On the other hand, a typical patient receiving hyperalimentation therapy may lack the ability to absorb and store this vitamin. Both vitamin A and

D are toxic in excessive dosages. When given in amounts exceeding 25,000 units per day, vitamin A will, in time produce anorexia, irritability, decalcification of bone, headache, and loss of hair. For vitamin D, the margin between requirement and toxicity is lower; doses exceeding 2,000 I.U. per day are potentially dangerous, and may cause hypercalcemia. The vitamin D intake should not exceed 400 I.U. per day.[10] Rather than toxicity, unnecessary waste would be the main concern with the water-soluble vitamins since excess amounts are not stored, but excreted in the urine. A conservative approach to vitamin therapy has been adopted by many authorities. Some use a vitamin A and D preparation once daily for seven days, then a therapeutic vitamin B complex with vitamin C, once daily for the rest of the therapy.[6] Others use the vitamin A and D preparation once a week, and the therapeutic B complex with vitamin C once a day for the rest of the week. Both plans appear to satisfy the vitamin requirements. Trace elements such as zinc, copper, manganese, cobalt, and iodine may be required when therapy is extended; these elements are usually supplied by plasma transfusions given once or twice weekly.

Equipment and Supplies.

One of the primary objectives of the IV Additive Program is to provide a clean air environment that will minimize the potential for contaminating intravenous solutions with airborne particles such as dust, lint, exhalations and microscopic debris emanated by human bodies — all of which can carry bacteria.[11] The laminar-flow hood allows clean-air environment by the use of a HEPA (high efficiency particulate air) filter. Prefiltered air passes through the HEPA filter, which filters out 99.97% of all particles measuring 0.3 microns, or larger in size. The flow of the filtered air, and other design features of such hoods prevent room air from entering the work area. It is in these hoods that the hyperalimentation solutions are prepared. The laminar flow hood, in fact, accounts for the major cost of the Program; however, other services provided by a complete IV Additive Program will also require the use of this hood, which costs from $400 to $2000 depending upon the magnitude of the operation.

Hyperalimentation kits can be obtained from several manufacturers. These kits usually provide two bottles, one containing the amino acids, and the other containing the dextrose solution. Through use of a transfer set these solutions are mixed together, and an enclosed sterile cap is applied. The enclosed label can be used, or a special label may be purchased. Some pharmacies manufacture their own solutions,[5] or evacuated pooling flasks may be utilized to mix the solutions.

The additives can be transferred to the bottle by needle and syringe; however, several convenience items are now available, such as double needle transfer devices or special additive units. These new conveniences eliminate several procedures and diminish the chance of contamination through touch and repeated handling. The techniques and skills acquired in this area will prove invaluable as the program is expanded. If the commercial kits are not used, special sterile caps can be purchased and applied, under the hood, to maintain the sterility of the prepared solutions.

An inspection light should also be employed to check the solutions for contaminants and incompatibilities, both before and after mixing. Incompatibilities do not ordinarily present a problem, since the type and number of additives are usually standard, and rather limited.

The equipment which is presently available in the pharmacy can be used to label the solutions, and to keep them under refrigeration. Complete records on each patient should be kept so that the program can be properly monitored. The basic requirements for the hyperalimentation program have been considered here; additional equipment may be added to fit the needs of the individual pharmacist. Better ways to prepare and administer intravenous solutions are presently under study. A plastic container has been proposed, with individual compartments from which the various constituents could be squeezed into a large reservoir portion of the container without traversing air, and without external connection. Portable pumps and a rolling intravenous pole have also been introduced, to ensure delivery of nutrients to ambulatory patients.[3]

Complications and Side Effects.

Sepsis and infection are the most frequent complications of intravenous hyperalimentation, and Candida *albicans* appears to be the primary offender.[7,12,13] Several studies have been undertaken to determine the sources of difficulty, and new techniques are being developed to avoid these complications.[14,15] Patients who require intravenous hyperalimentation are usually severely ill and malnourished, often requiring broad-spectrum antibiotics, steroids, or insulin. Such patients are particularly predisposed to superinfection with both fungus and antibiotic-resistant microorganisms.[14] Long-term venous catheterization has also been associated with disseminated candidiasis.[12] All aspects of the procedure were studied carefully, including the catheter site, the administration sets, the use of in-line filters and the nutrient solutions. It was generally concluded that there is no substitute for good aseptic technique. To prevent infections, the preparation of sterile

intravenous solutions is essential; the pharmacist can provide such a service. It was also concluded that the indwelling catheter should not be used to draw or infuse blood, or to administer drugs or fluids other than the hyperalimentation solution.[7]

Hyperosmolar nonketotic hyperglycemia can occur in patients receiving hyperalimentation therapy. The high concentration of dextrose administered causes an increase in blood glucose concentration, and osmotic diuresis results when the renal threshold for glucose is surpassed. If the glycosuria persists, dehydration, loss of body sodium, contraction of fluid compartments, acidosis and serum hyperosmolarity can occur; if allowed to continue for several days, coma and loss of consciousness can result. The presently reported death rate for this complication is 41 to 45%.[7,16] Transient glycosuria which is noted during the first few days of therapy should be treated with regular insulin replacement, based on fractional urinary glucose determinations.[7] Rebound hypoglycemia should also be kept in mind whenever the hypertonic glucose infusions are suddenly stopped. A gradual decrease in infusion rate for a few days, or infusion of isotonic glucose for at least six hours after discontinuing hypertonic glucose, can help to avoid this complication.[8] It is also important to administer the intravenous solutions throughout the entire 24-hour period, at a steady rate of infusion. If the hypertonic fluid is infused over one eight-hour period, followed by two eight-hour periods of isotonic fluid administration, the wide variations in dextrose concentration, insulin response, urine output and content may precipitate diuresis and dehydration.[1]

Although the use of the superior vena cava and the subclavian vein has proven to be the safest and most reliable technique for hyperalimentation, the placement of the catheter is not without its problems. The subclavian puncture should be done by one who is skilled in this technique. While pneumothorax is the most frequent, other complications include: catheter misplacement, subclavian artery entry, air embolism, and thrombophlebitis.[17,18,19]

As with any new technique, further experience soon reveals side effects which were not initially encountered or appreciated. Metabolic abnormalities involving glucose, amino acids, calcium, phosphorus, and fatty acids have been noted.[8] Other metabolic derangements will undoubtedly arise, and patients should be carefully monitored to detect any unusual changes.

CONCLUSION

This article provides a superficial review of a new technique. It is intended to pique the curiosity of interested readers in such a way as to invite further independent reading and research. It can be a beginning for those interested in establishing or expanding the IV Additive Program. With the proper direction and guidance, experience and skills acquired in the most modest hyperalimentation program will create a solid foundation upon which to build expanded professional services in the future.

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AMBULATORY CARE NURSE PRACTITIONERS

Ten registered Navy nurses graduated in January from the locally sponsored ambulatory care nurse practitioners' pilot program at Naval Hospital San Diego, Calif.

The graduates successfully completed a two-month intensive didactic program, followed by four months of preceptorship and additional seminars.

The advanced educational program prepares nurses for additional responsibilities. They will now assess health problems by interviewing and examining patients, evaluating clinical findings together with the supervising physician. These nurse practitioners will plan patient care, and are qualified to order selected diagnostic procedures, prescribe therapeutic measures, teach, and counsel. The expertise of other members of the health care team is available on a referral basis.

The ambulatory care nurse practitioners will be involved in a continuing education program, expanding their knowledge and expertise to become certified Family Nurse Practitioners. They have been assigned to the Outpatient Clinic at the Naval Hospital San Diego, and to regional dispensaries at Miramar, Imperial Beach, and Amphibious Base, Coronado, Calif. — PAO, Naval Hospital San Diego, Calif.

THE GRADUATES.—Pictured above with RADM H.G. Stoecklein, MC, USN, Commanding Officer of Naval Regional Medical Center San Diego, Calif., are the first ten Navy nurses to graduate from the locally-sponsored pilot program for ambulatory care nurse practitioners at Naval Hospital San Diego. From left to right are: LT Judith Pattinson, LT Lila Fillmore, LTJG Marilyn Stryker, LTJG Wendy Bregar, LT Diane Sentinella, LCDR Claire Cronin, LCDR Betty Thomas, LT Deborah Sherman, and CDR Angeline Liakos.

INTRAVENOUS ADDITIVE PROGRAM:

Progress at Naval Hospital Portsmouth

By LT James A. Gehlhausen, MSC, USNR,
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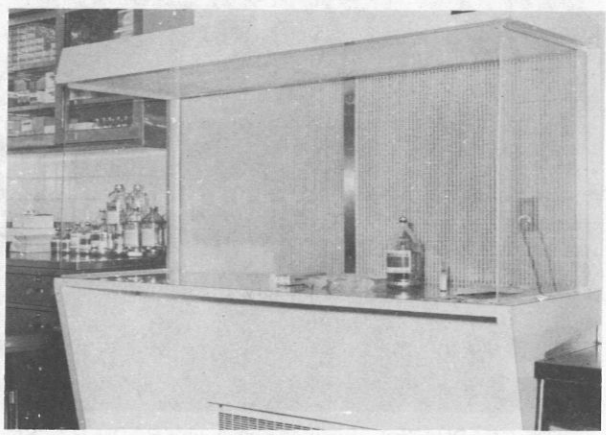
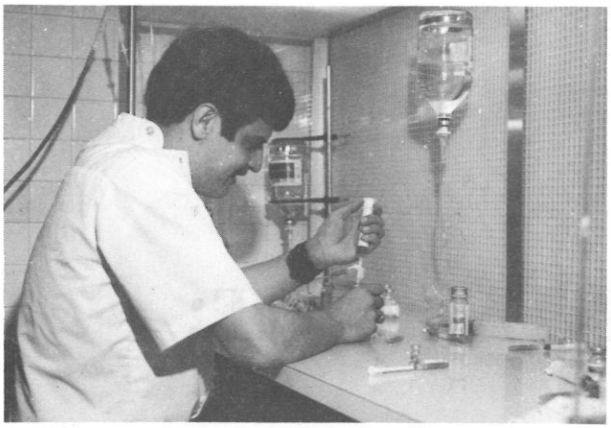
The Pharmacy Intravenous (IV) Additive Program began at Naval Hospital Portsmouth, Va., on 20 March 1972. The Pharmacy Service was able to utilize a small room located in the Central Supply Room area. Following the purchase of two six-foot laminar flow hoods, the Pharmacy Service commenced filling intravenous orders for the intensive-care units. Initially, nurses, physicians, and even pharmacists shared considerable skepticism about the value of such a program. However, through the efforts of LTJG Dom DePolo and the rest of the Pharmacy staff, the program gained acceptance and was quickly implemented throughout the hospital.

After one year of operation, the Intravenous Additive Service was well established, with the staff filling orders for approximately 130 sterile units per day. Throughout the hospital the clinical response has been enthusiastic. Nursing personnel have become dependent on the service, both for the filling of their intravenous orders, and for obtaining answers on compatibility questions that may arise. Physicians are beginning to order more complex solutions, because they know the Pharmacy can now formulate their orders more efficiently and aseptically than could have been possible previously on the patient's ward. As increased awareness and acceptance evolved, our Intravenous Additive Service progressed to the point where 280 sterile units per day were being filled during the month of August 1973. The record now stands at 381 sterile preparations formulated during a single day. This represents substantial growth during a period of just 18 months.

The IV Additive Service prepares many different forms of sterile preparations. The simple addition of electrolytes and vitamins to an intravenous-fluid bottle comprises about 35% of the preparations. Although these represent the simplest type of preparation, the increased safety to the patient and the saving of nursing time make the central additive service worthwhile. Approximately 50% of the work involves preparation of antibiotic dosages. The service utilizes the partial-fill



LAMINAR-FLOW HOODS.—Pictured above is one of two six-foot laminar flow hoods that are utilized in preparing sterile solutions, by the IV Additive Service at Nav Hosp Portsmouth, Va.



ADDING ANTIBIOTIC DOSAGES.—Approximately 50% of the work of the Portsmouth Nav Hosp IV Additive Service involves the preparation of antibiotic solutions. In the above photo, antibiotics are being reconstituted for this purpose.

bottles in order to allow administration of the antibiotics in "piggy-back" fashion, at the appropriate times. In addition, irrigation solutions of antibiotics for the Surgery Department, ophthalmic solutions, and lidocaine and isoproterenol drips for the Coronary Care Unit are prepared. The IV Additive Service has also experimented with a method of prefilling unit-dose injectable medications. As can be seen, the Pharmacy Service plays a versatile role in intravenous service, but there are additional responsibilities.

As another expansion of service, the IV Additive staff visits all the wards at least once per day in order to pick up intravenous orders, which are subsequently filled and delivered to the ward by the Pharmacy staff. This operation provides an additional feature, that of getting the pharmacist on the ward, on a regular basis. In that way, intercommunication is encouraged, and the pharmacist is available to assist in other drug-related problems that may arise.

Hyperalimentation therapy has become very prominent at this hospital. The Surgery, Medical and Pediatric Departments are now employing this form of therapy frequently. In preparing the complex solutions required, a very close physician-pharmacist relationship has resulted. In most cases, individual formulas are developed jointly by the physician and pharmacist. The IV Service then prepares the solutions aseptically, and continues to follow the patient's progress closely throughout the duration of therapy. At one time, in August 1973, there were ten patients on hyperalimentation; presently there are two patients on home-hyperalimentation therapy. For our home patients, the Pharmacy prepares hyperalimentation fluids twice per week; the solutions are obtained at the Pharmacy. Patients are thoroughly instructed on the care of fluids and the methods of administration, along with the proper care of catheter sites. Hyperalimentation solutions add greatly to the workload, but they constitute an extremely important aspect of patient care. It would be virtually impossible to prepare a quality hyperalimentation order on the patient's ward. The great increase in the clinical demand for this type of therapy can be explained, at least in part, by the fact that the Pharmacy is now able to prepare such solutions efficiently and aseptically.

The Portsmouth Naval Hospital Intravenous Additive Program has come a long way in a mere 18 months of operation. It has proved to be a great asset to this command. The Pharmacy-operated service frees many nurses to devote more attention to other patient demands, and it has been beneficial in decreasing medication errors. Since the Pharmacy is able to screen most intravenous orders, potential incompatibilities and interactions are detected. Overall, the entire hospital staff has come to rely and depend upon the Intravenous Additive Service.

The Intravenous Additive Program presently operates during the hours of 0800-1600, Monday through Friday. In case of an emergency during the off hours, one of the program's personnel can be contacted for help and/or information. The Pharmacy Service is presently unable to expand these hours because of the shortages of trained personnel. However, the benefits of maintaining an Additive Service, even during limited hours, justifies the extra effort imposed upon the Pharmacy Service. In the future, hospital officials hope to expand the Additive Service to a seven day, 24-hour program as qualified personnel become available.

A pharmacy-operated IV Additive Service is a relatively new concept in Navy Medicine. However, it has been shown to be very useful in saving precious time of physicians and nurses. Distinct advantages also accrue to patient care, since intravenous fluids are prepared in a relatively sterile environment, by personnel trained to work with intravenous medications. The routine function of a small cadre of additive specialists ensures that patient requirements for specific intravenous solutions are met in an efficient, orderly, and responsible manner.

MOBILE DENTAL UNIT:

Construction and Utilization

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The Dental Service of the Naval Hospital Portsmouth, Va., recently put into use a specially constructed mobile dental unit. This versatile portable unit contains all the essentials of a mobile dental cabinet and a complete dental unit. Constructed principally from surplus parts by Navy personnel at minimal expense, it has enhanced the delivery of dental care to nonambulatory hospital patients.

DEVELOPMENT

The need for and utility of such a unit was perceived by RADM Willard P. Arentzen, MC, USN, CO, Naval Hospital Portsmouth, Va., when he initially recommended the construction of a mobile dental facility in 1968 as CO of the Naval Hospital in USS *Sanctuary*. The following year RADM Arentzen assumed command of the Naval Hospital at the Marine Corps Base in Camp Lejeune, N.C. Under his guidance, the hospital dental service at Lejeune constructed, and to some extent utilized a prototype model of the mobile dental unit described in this article. A new, expanded, and vastly improved model of the same dental unit was recently put into use at the Naval Hospital in Portsmouth, Va.

CONSTRUCTION

Construction of this cart-like dental unit began with the procurement of a commercially available automotive mobile tool cabinet measuring 26 inches long, 18 inches deep, and 32 inches high. The noisy wheels were replaced by larger and quieter casters, and a push-cart-type handle was added. The cart was reinforced for receiving additional weight, and mountings were placed to hold two small tanks of compressed carbon dioxide gas (CO_2). (Tanks of 1,000- or 1,500-liter size are accommodated.) Each is approximately two feet in length, and 23 pounds in weight. This non-explosive, nonflammable, compressed carbon-dioxide gas, when released through a reduction valve, provides approximately 40 pounds of pressure per square inch. The released gas is used to drive turbine dental handpieces, to pressurize water tanks, and to provide an "air" blast from the dental syringe. With routine-to-heavy use of the handpieces, the supply of CO_2 gas should normally be sufficient for approximately three hours of restorative dental care.

There are two Midwest Air Drive turbine dental handpieces: one is high speed with low torque; the other is low speed with high torque. These handpieces

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Commercially developed mobile dental models designed to accommodate delivery of dental care for non-ambulatory patients are presently being marketed and tested.—Ed.

The opinions or assertions contained in the above article are those of the author and are not to be construed as official, or necessarily reflecting the views of the Navy Department or the naval service at large.

are connected to the cart by flexible plastic tubing. The handpieces drive rotary dental drills or burs, and are equipped with adjustable controls for speed and coolant water spray. A combination three-way dental syringe is also mounted on the cart unit. By finger-pressure control this syringe can be adjusted to deliver a stream of air (actually CO_2), water, or a mixed-combination spray. Two stainless-steel tanks contain a supply of pressurized water. In addition to being plumbed to the dental syringe and handpieces, the water is also supplied to a Densply Cavitron Unit which is mounted on top of the cart. The Cavitron uses minute ultrasonic vibrations through interchangeable dental tips to clean and scale calculus deposits from teeth. The unit contains necessary controls for water, tuning, and power.

The mobile dental unit is equipped with a Gomco suction unit driven by a 1/4-horsepower electric motor. By attaching the desired tip this evacuator tubing can be utilized for surgical suctioning, or may also be used for simple saliva ejection. Up to 30 pounds of vacuum per square inch is delivered by the evacuator tubing. A reservoir bottle for accumulated aspirate will hold up to 1,000 ml of saliva, water, or blood before emptying is required.

An electrical system is built into the cart, with duplex plug outlets provided for electrical gear. An electric amalgamator is mounted on top of the cart to agitate the mixture of amalgam and mercury, prior to filling prepared dental cavities. The dental handpieces and Cavitron unit are operated by electric foot-control switches that can be stored in the cabinet drawers during transport of the dental cart. An electric receptacle is available for a portable electric head lamp. This light is normally not necessary in an operating room with adequate lighting, but may be helpful when the cart is used on wards, or in hospital rooms. The mobile dental unit's 50-ft extension cord can be plugged into any regular 110-volt wall outlet.

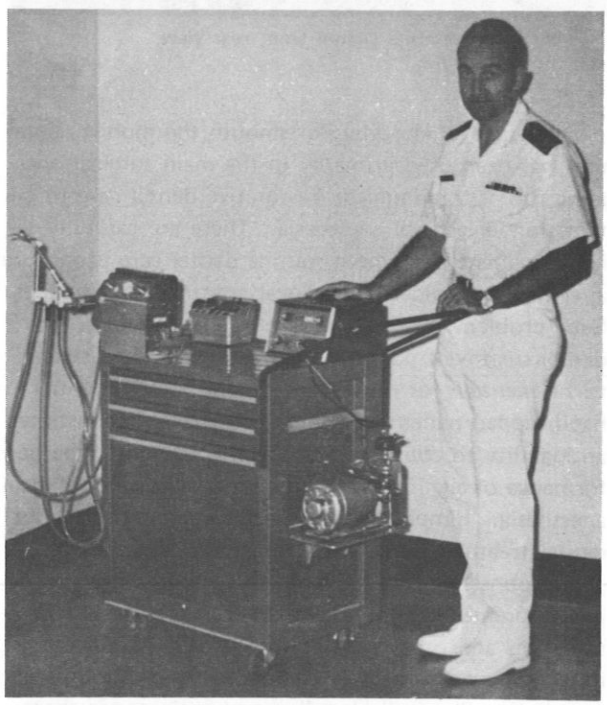
Since the unit is not spark free, it should not be used in operating rooms where explosive-gas anesthesia is administered. This is a relatively insignificant handicap, since these anesthetic agents are seldom used today.

The drawers of the cart can be stocked with any desired dental materials and instruments. If necessary the drawers can be locked for security. After it is completely assembled, the mobile dental unit should be thoroughly tested, cleaned, and painted.

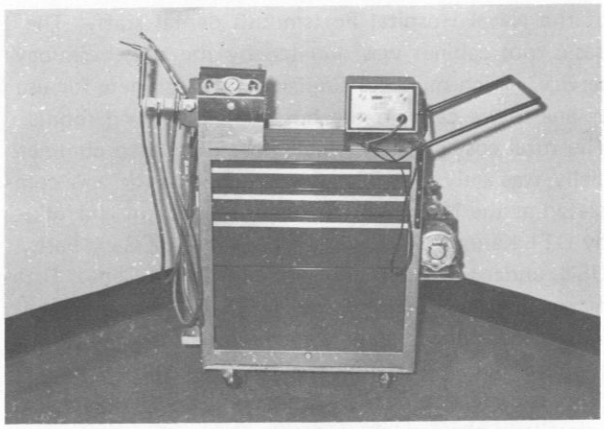
Nearly all the components of the assembled mobile dental unit can be ordered through the Federal stock-supply system. Most of the parts we used represented surplus, used equipment that was procured from various sources by Chief Dental Technician Jerry Murray of the Naval Hospital Portsmouth dental staff. The basic tool cabinet was donated by the anesthesiology service, which modifies similar mobile cabinets for use as anesthesia carts in the hospital's operating rooms. The total cost of parts which were purchased commercially was only $44.98. Construction work was completed at the Navy Dental Repair Facility in Norfolk, by DT1 Kenneth W. Havens, USN and DT2 Gary Earls, USN, under the supervision of Senior Chief Dental Technician James J. Baumgardner, USN. Approximately 115 man-hours of labor were required. A few similar types of mobile dental units are commercially available, but they are not nearly so economical, complete, or versatile as the model we constructed.

UTILIZATION

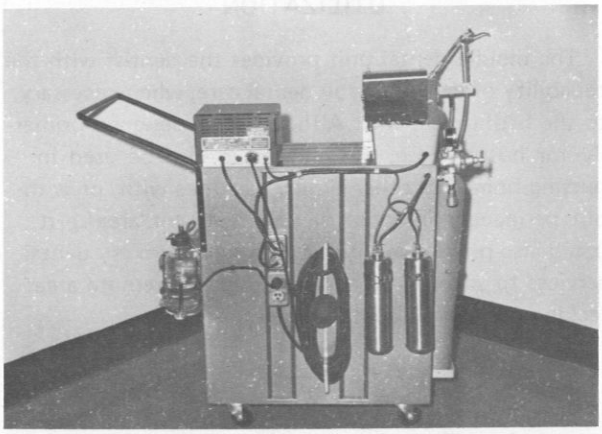
The mobile dental unit provides the dentist with the capability of delivering full dental care, when necessary, to the bedfast patient. Although it is designed primarily for hospital use, the unit could also be used in nursing homes or other similar facilities with, or without permanent in-house dental treatment areas. It could also prove useful for delivering temporary dental services to schools, organized groups, or remote areas lacking permanent dental services.



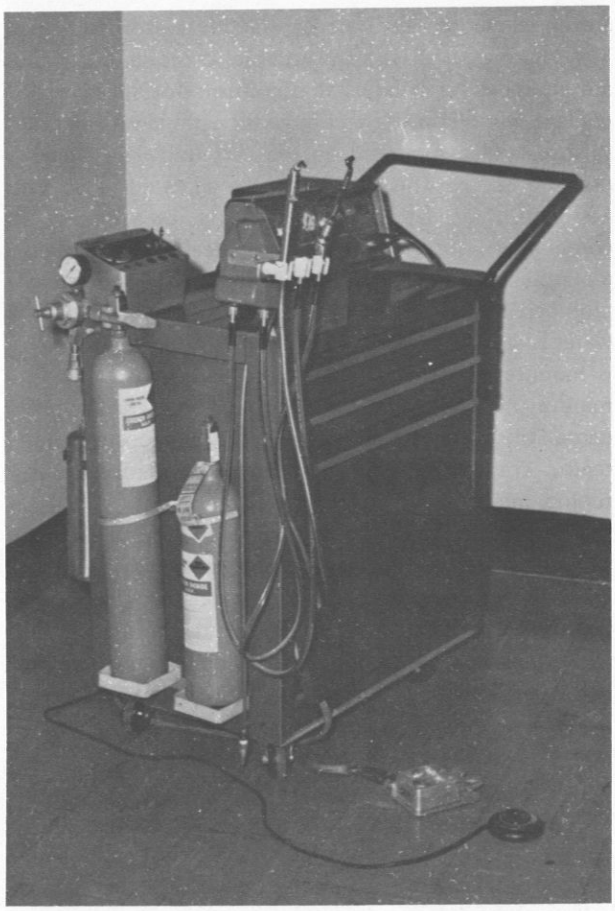
MODEL DESIGNER.—Designer CDR Thomas E. Stump, DC, USN demonstrates the mobile dental unit used at Naval Hospital Portsmouth, Va.



Mobile Dental Unit, front view.



Mobile Dental Unit, rear view.



Mobile Dental Unit, front-end (oblique) view with foot controls.

At the Naval Hospital Portsmouth the mobile dental unit has been used primarily in the main surgical operating rooms to administer restorative dental care to patients under general anesthesia. These are carefully selected patients for whom routine dental care cannot be adequately provided using local anesthesia techniques. Such problem patients are usually children and, from a dental treatment point of view, are usually considered to be *mentally* or *physically* handicapped. Mentally handicapped patients are those who have demonstrated an inability to cooperate sufficiently to permit the performance of significant quality dental work under local anesthesia. Simple psychological apprehension about dental treatment can and should be overcome with good counseling, proper technique, and, when appropriate, premedication. However, with severe mental retardation and other mental aberrations, significantly improved management is only possible under general anesthesia. Physically handicapped patients are those who present with assorted medical problems that render conventional dental care unsatisfactory. For example, this group might include patients with various involuntary spastic muscle disorders.

Following a thorough dental evaluation, those patients that appear to qualify for dental care performed under general anesthesia receive appropriate anesthesiology, pediatric, and internal medicine consultations. After medical clearance, together with patient and parental approval, a dental appointment is scheduled. At the Naval Hospital Portsmouth, such patients are usually scheduled for Wednesday mornings in the main operating room. Most are treated as outpatients, and are therefore instructed to forego breakfast, and to report to the hospital early on the morning of the anticipated surgery. The patient is premedicated, delivered to the operating room, and receives general anesthesia. Nasal endotracheal or oral-endotracheal tubes are conventionally employed in these cases. The restorative dentist in the operating room may pack the throat with protective gauze, or he may prefer to use the rubber dam. Multiple restorations involving total dental care to one or more complete dental quadrants are

accomplished. With a completely cooperative and controlled patient under general anesthesia, it is usually possible for the operator to increase his productive work two or threefold, or more, over what would otherwise be feasible. Usually all required dental work is performed during a single period of general anesthesia. Working time may vary considerably, but usually averages two or three hours. When stabilized, the extubated and awakened patient is delivered to a recovery room where he is retained until he has become fully responsive. After he is adequately alert, the patient is returned home on the same day, in the company of a responsible parent or other adult. If serious medical management problems are anticipated, the patient may require hospital admission for one or more days preceding the dental treatment, and would therefore be handled in an inpatient status, rather than as an outpatient.

In addition to its function in the operating room for patients under general anesthesia, the mobile dental cart has also been found useful in treating orthopedic, geriatric, and neurosurgical patients who are not ambulatory, and who cannot realistically be transported to the dental clinic. For such patients, the required care may take the form of a simple dental examination, or more involved restorative or emergency dental care. The dental cart is especially well equipped to permit the dentist, the oral hygienist, or the dental technician to perform dental prophylaxis (scale and clean the teeth) on bedfast patients. This unexpected attention has been very well received by patients, as well as by appreciative ward medical officers and staff personnel. Such service has increased the exposure and enhanced rapport of the dental officer with his medical colleagues throughout the hospital.

The mobile dental cart offers wide applicability, not only in other military hospitals, but in civilian hospitals and other health care facilities as well. It is quite possible that, in the future, similar equipment and service will become customary in all major hospitals.

FIRST TWO WOMEN FLIGHT SURGEONS

For the first time, two female physicians are wearing the gold wings of a Navy flight surgeon. LT Jane O. McWilliams, MC, USN, and LT Victoria M. Voge, MC, USN, were among the 23 graduates who received diplomas and flight surgeon wings last December, in ceremonies conducted at the Naval Aerospace Medical Institute, Pensacola, Fla. The two trail blazers began flight surgeon training in July 1973, and graduated in the top half of their class.

TRAIL BLAZERS.—LT Victoria M. Voge, MC, USN (left) and LT Jane O. McWilliams, MC, USN (right), the first female flight surgeons in the Navy, receive clinical pointers in ophthalmology from CAPT Fred S. Evans, MC, USN.

Dr. McWilliams was assigned to Naval Station, Keflavik, Iceland, where she will serve as flight surgeon for visiting patrol squadrons. Dr. Voge was assigned to research duty at Naval Air Development Center, Warminster, Pa.—PAO, Naval Aerospace Medical Center, Pensacola, Fla.

NEW SUBMARINE MEDICAL OFFICERS

Congratulations to the following physicians who were designated qualified submarine medical officers during 1973:

LCDR William D. Craver, MC, USN
LCDR Harold M. Ginzburg, MC, USNR
LT Kristopher M. Greene, MC, USNR
LCDR William L. Hunter, Jr., MC, USNR
LT Dexter L. Jeffords, MC, USNR
LCDR Douglas R. Knight, MC, USN
CDR William B. Mahaffey, MC, USNR
LCDR Kenneth R. Olson, MC, USNR
LCDR Calvin L. Polland, MC, USNR
LT William A. Tansey, MC, USNR

(Courtesy of CO, Nav Sub Med Cen New London, Groton, Conn.)

PETECHIAE in the NEWBORN

By LCDR H.M. Koenig, MC, USN
and
CAPT J.E. Lang, MC, USN;
Hematology Branch, Medical Service, and
Clinical Investigation Center,
Naval Hospital San Diego, California 92134.

Newborn infants delivered by the vaginal route have petechiae over the presenting parts, usually the head and upper trunk. Petechiae appear immediately after delivery, and no new lesions should develop after this period. If petechiae appear after the first few hours of life, a clinical work-up should be accomplished to determine the etiology of the bleeding.

PATHOPHYSIOLOGY

The hemostatic mechanism involves complex interactions of the vasculature, platelets, and plasma-coagulation factors. Upon injury, small blood vessels immediately contract, slowing the loss of blood. However, vessel contraction alone will not cause complete hemostasis. Within a matter of a few seconds, platelets begin to adhere to collagen fibers exposed beneath the injured vascular endothelium. As the platelets adhere, they undergo a complex reaction of adenosine diphosphate (ADP) and platelet phospholipid (PF-3) release. ADP release causes nearby platelets to aggregate about the platelets adhering to the vessel wall.

Within one to two minutes, a platelet plug is formed at the site of vessel injury. Tissue thromboplastins and Hageman factor released at the time of injury activate the extrinsic and intrinsic coagulation mechanisms resulting in the formation of fibrin. Deposition of fibrin begins in the platelet plug within a few minutes of the time of vessel injury, and the process continues for a period of time up to 48 hours. Fibrinolysis and resolution of the clot occurs over a two-week period.

Bleeding as a result of ineffective blood vessel contraction is an extremely rare event. Petechiae usually result from either a deficient number of platelets or a defect in platelet function. Defects in the coagulation mechanism generally cause oozing from venipuncture sites or hemorrhaging into large muscles or the viscera.

ETIOLOGY

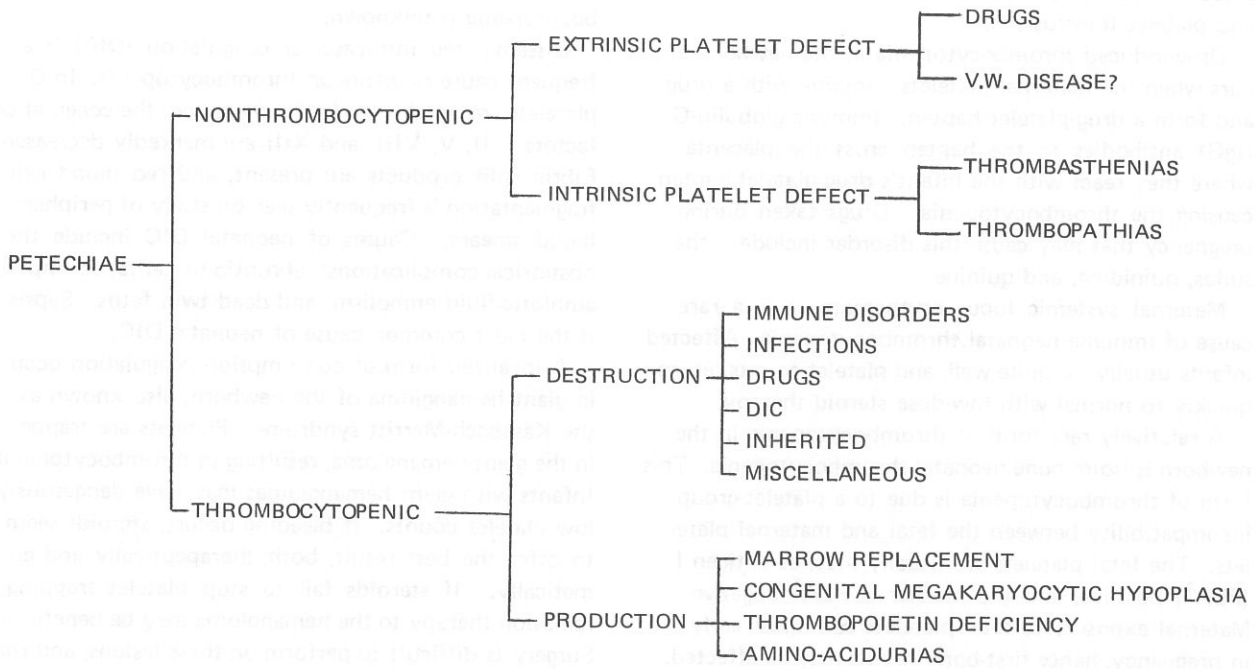
There are many causes of petechiae in the newborn. A systematic approach to the work-up of a newborn with petechiae can be accomplished by remembering the pathophysiology of platelet defect (See Figure 1). Petechiae may occur in infants who are nonthrombocytopenic or thrombocytopenic. Nonthrombocytopenic forms of petechiae are due either to extrinsic or intrinsic platelet defects.

Nonthrombocytopenic

Extrinsic platelet defects causing petechiae result from failure of platelets to aggregate properly. Certain drugs used during pregnancy prevent platelets from releasing ADP and hence undergoing aggregation. Platelets of the newborn normally do not aggregate well in response to ADP; therefore, the effect of drugs on platelets of a newborn is greater in comparison with the effect of drugs on the platelets of older individuals.

The opinions or assertions contained herein are those of the authors and are not to be construed as official, or reflecting the views of the Navy Department or the naval service at large.

Figure 1
Causes of Petechiae in the Newborn



Common drugs that interfere with platelet aggregation include several antihistamines, nonsteroid anti-inflammatory agents, tranquilizers, antidepressants, and cough medications (See Table 1).

Table 1
Drugs Affecting Platelet Aggregation

(1) ANTIHISTAMINES:
- PHENERGAN
- BENADRYL

(2) NONSTEROID ANTI-INFLAMMATORY AGENTS:
- ASPIRIN
- PHENYLBUTAZONE
- INDOMETHACIN

(3) TRANQUILIZERS:
- THORAZINE
- COMPAZINE
- LIBRIUM
- VALIUM

(4) ANTIDEPRESSANTS:
- TOFRANIL

(5) COUGH MEDICATIONS:
- GLYCERYL GUAIACOLATE

Von Willebrand's disease is an autosomal dominant condition characterized by a defect in platelet adhesion to glass beads, a prolonged bleeding time, and low levels of factor VIII. Von Willebrand's disease rarely causes problems in the newborn; however, serious intracranial hemorrhage has been reported with this condition.

Intrinsic platelet defects that may cause bleeding in the nonthrombocytopenic newborn include the thrombasthenias and the thrombopathias. Thrombasthenic platelets fail to aggregate when exposed to ADP, collagen, thrombin, or epinephrine. The thrombopathias are a result of failure of the platelet to either store or release ADP from the storage granule. Both of these conditions are extremely rare. However, they should be considered in the work-up of any nonthrombocytopenic newborn with petechiae whose mother received no drugs during the ten days prior to the infant's birth.

Thrombocytopenic

Increased platelet destruction causes thrombocytopenia and petechial hemorrhage. There are several immune mechanisms that cause thrombocytopenia in the newborn. Fifty percent of infants born to mothers with chronic idiopathic thrombocytopenic purpura (ITP) will be thrombocytopenic at birth. A maternal immunoglobulin-G (IgG) antibody is passively acquired across the placenta, and causes the thrombocytopenia.

The risk to these infants appears to be low. The thrombocytopenia may persist up to four months. If bleeding occurs, such infants are treated with steroids and platelet transfusions.

Drug-induced thrombocytopenia in the newborn occurs when the maternal platelets combine with a drug and form a drug-platelet hapten. Immune globulin-G (IgG) antibodies to the hapten cross the placenta where they react with the infant's drug-platelet hapten, causing the thrombocytopenia. Drugs taken during pregnancy that may cause this disorder include: the sulfas, quinidine, and quinine.

Maternal systemic lupus erythematosus is a rare cause of immune neonatal thrombocytopenia. Affected infants usually do quite well, and platelet counts return quickly to normal with low-dose steroid therapy.

A relatively rare form of thrombocytopenia in the newborn is isoimmune neonatal thrombocytopenia. This form of thrombocytopenia is due to a platelet-group incompatibility between the fetal and maternal platelets. The fetal platelets are usually platelet antigen I (PLA^1) positive, and the mother is PLA^1 negative. Maternal exposure to fetal platelets can occur early in pregnancy, hence first-born infants may be affected. The antigen is inherited as an autosomal dominant, so future pregnancies have a 50 to 100% risk of being affected, depending on the zygosity of the father. Two percent of the population is PLA^1 negative, so affected infants occur in only one of 10,000 births. The diagnosis can be made by checking maternal and paternal platelets for the presence or absence of PLA^1 antigen. Affected infants are treated with steroids, exchange transfusion, and washed PLA^1-negative platelets. The best source of these platelets often may be the mother herself. The mortality in this condition has been reported to be as high as 15%.

Erythroblastosis fetalis is an immune hemolytic process that may be associated with thrombocytopenia. The exact mechanism for this thrombocytopenia is unknown, but has been postulated to be due to direct toxicity of bilirubin on the megakaryocyte. Erythroblastotic infants may also become thrombocytopenic as a result of repeated exchange transfusions with platelet-poor blood.

Numerous infectious agents that may cause thrombocytopenia in the newborn are recognized. These include toxoplasmosis, rubella, cytomegalovirus, herpes virus, syphilis, and several bacterial infections. Congenital anomalies, hepatosplenomegaly, jaundice, and intracranial calcifications may be present in infants rendered thrombocytopenic as a result of infection with one of these agents. The diagnosis can be confirmed by proper serologic or culture techniques. Chlorothiazides and tolbutamide have been reported as rare causes of thrombocytopenia in the newborn. The mother is not thrombocytopenic. The mechanism of the thrombocytopenia is unknown.

Disseminated intravascular coagulation (DIC) is a frequent cause of neonatal thrombocytopenia. In DIC, platelets are usually markedly decreased; the coagulation factors I, II, V, VIII, and XIII are markedly decreased. Fibrin split products are present, and red blood cell fragmentation is frequently seen on study of peripheral-blood smears. Causes of neonatal DIC include the obstetrical complications: abruptio placenta, eclampsia, amniotic-fluid embolism, and dead twin fetus. Sepsis is the most common cause of neonatal DIC.

A localized form of consumption coagulation occurs in giant hemangioma of the newborn, also known as the Kasabach-Merritt syndrome. Platelets are trapped in the giant hemangioma, resulting in thrombocytopenia. Infants with giant hemangiomas may have dangerously low platelet counts. If bleeding occurs, steroids seem to offer the best result, both therapeutically and cosmetically. If steroids fail to stop platelet trapping, radiation therapy to the hemangioma may be beneficial. Surgery is difficult to perform on these lesions, and the cosmetic results are generally poor.

Inherited thrombocytopenias occurring in the neonate include the Wiskott-Aldrich syndrome and the May-Hegglin anomaly. The Wiskott-Aldrich syndrome is characterized by eczema, frequent infections, and thrombocytopenia. In the newborn period, children may present with severe petechial hemorrhage. The May-Hegglin anomaly is characterized by thrombocytopenia with giant-platelet forms and Döhle's inclusion bodies in the granulocytes. These infants generally do well and present few problems during the newborn period.

Thrombocytopenia due to decreased platelet production occurs in infiltrative marrow disease caused by congenital leukemia, congenital histiocytic syndromes, and osteopetrosis. There are many forms of congenital megakaryocytic hypoplasia that cause neonatal thrombocytopenia, including an isolated form and those associated with other abnormalities. Common syndromes with congenital megakaryocytic hypoplasia are: the thrombocytopenia-absent radius (TAR) syndrome, thrombocytopenia associated with microcephaly, and thrombocytopenia associated with cardiac anomalies. Failure to produce thrombopoietin has been reported as a cause of persistent thrombocytopenia in one child.

Fanconi's anemia with pancytopenia and congenital anomalies is seldom a cause of thrombocytopenia in the newborn. These children usually have normal blood counts until they are six to eight years of age,

at which time they develop a pancytopenia and aplastic anemia. Thrombocytopenia has been occasionally associated with the trisomy D or E syndromes.

CLINICAL APPLICATION

The diagnostic approach to the infant with petechiae should hinge on the platelet count. A platelet count should be performed immediately on any infant with petechiae developing after the first few hours of life. Any physician caring for newborns should be able to accurately and adequately estimate the platelet count by examining the peripheral blood smear. If the platelet count is normal, a thorough history of maternal drug ingestions for the two weeks preceding delivery and the drugs administered during labor should be obtained. Any family history of bleeding disorders should be noted. If the history fails to reveal the cause of the poorly functioning platelets, studies should be performed to determine if the infant has an intrinsic platelet defect.

If the platelet count is decreased, inquiries into a maternal history of ITP, systemic lupus erythematosus, drug ingestion, febrile exanthem during the first trimester, or previously born similarly affected infants should be made. The placenta should be examined for presence of a placenta chorioangioma, and the maternal serologic test for syphilis should be checked.

If the maternal platelet count is low, conditions such as maternal ITP, systemic lupus erythematosus, drug purpura, or inherited thrombocytopenia should be considered. If the mother's platelet count is normal, the infant should be examined carefully for the presence of hepatosplenomegaly, congenital anomalies, or hemangiomas. If the infant's physical examination is otherwise normal, isoimmune purpura, inherited thrombocytopenia, congenital aplastic anemia, and rarely, amino-acidurias should be considered as causes of thrombocytopenia.

If the infant has hepatosplenomegaly, infections or congenital leukemia are the probable causes of thrombocytopenia. If congenital anomalies are present, the rubella syndrome, the trisomy syndromes, and congenital megakaryocytic hypoplasia with associated congenital anomalies should be considered as the likely etiology.

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First Navy Physician in Space

CAPT Joseph P. Kerwin, MC, USN, the Nation's first astronaut-physician to go into space, has been awarded the Distinguished Service Medal (DSM) by the Secretary of the Navy John W. Warner. CAPT Kerwin served as science-pilot on Skylab 2 with CAPT Paul J. Weitz, USN, and CAPT Charles Conrad, Jr., USN, both of whom also received the DSM on 5 Oct 1973. Together with the Distinguished Service Medal, Secretary Warner presented citations noting the Skylab mission accomplishments. CAPT Kerwin's citation read, in part:

> "Utilizing his scientific and technical expertise, Captain Kerwin spent many hours supervising and conducting major experiments in the areas of life sciences, solar physics, earth observations, astrophysics, and orbital weightlessness. Through his professional competence and dedication, he contributed immeasurably to the success of this historic mission, the results of which will furnish information of great significance to man's continuing knowledge and understanding of himself and the universe.
>
> "Captain Kerwin's courageous and inspiring devotion to the fulfillment of a most exacting and vitally important assignment reflected great credit upon himself, the National Aeronautics and Space Administration, and the United States Naval Service."

Secretary Warner also presented the Navy astronaut wings to CAPTs Kerwin and Weitz. CAPT Conrad had previously been awarded the astronaut wings for an earlier space flight.

The duration of Skylab 2 mission was 28 days and 49 minutes. The mission was launched on 25 May

USS *TICONDEROGA.*—The primary recovery ship, *Ticonderoga* picked up the Skylab-2 crew in the Pacific Ocean, 750 miles southwest of San Diego.

SKYLAB-2 CREW HONORED.—Secretary of the Navy John W. Warner (2nd from right), awarded Distinguished Service Medals to the all-Navy crew of Skylab 2. Astronauts are (from left to right); CAPT Joseph P. Kerwin, MC, USN; CAPT Charles Conrad, Jr., USN, and; CAPT Paul J. Weitz, USN. In turn, the Astronauts presented Secretary Warner with a plaque that included a miniature of the Secretary's flag, which accompanied the Skylab Mission.

1973 from the Kennedy Space Center, Fla., aboard a Saturn IB rocket, with splashdown on 22 Jun 1973. The aircraft carrier USS *Ticonderoga* was the primary recovery ship that picked up the Skylab-2 crew in the Pacific Ocean, 750 miles Southwest of San Diego.

NAVY FLIGHT SURGEON-AVIATOR

CAPT Kerwin has been a member of the Navy Medical Corps since July 1958, and a naval aviator/flight surgeon since 1962. The National Aeronautics and Space Administration (NASA) selected him as an astronaut-scientist in June 1965. CAPT Kerwin received a Bachelor of Arts degree in Philosophy from the College of Holy Cross, Worcester, Mass., in 1953 and a Doctor of Medicine degree from Northwestern University Medical School, Chicago, Ill., in 1957. He completed his internship at the District of Columbia General Hospital in Washington, D.C. He is a 1958 graduate of the U.S. Navy School of Aviation Medicine at Pensacola, Fla. In addition to the DSM, the astronaut-physician was awarded NASA's Manned Spacecraft Center Certificate of Commendation in 1970. CAPT Kerwin is a Fellow of the Aerospace Medical Association, a member of the Aircraft Owners and Pilots Association, and Phi Beta Pi.

Prior to becoming a Naval aviator, CAPT Kerwin served for two years as a flight surgeon with Marine Air Group 14 at Cherry Point, N.C. He then earned his Navy pilot's wings at Beesville, Tex. Subsequently he became a dual designated flight surgeon for Fighter Squadron 101 at Oceana Naval Air Station, Virginia Beach, Va., and was thereafter assigned as staff flight surgeon for Air Wing Four, Naval Air Station, Cecil Field, Fla. As a pilot, CAPT Kerwin has logged 2,000 hours of flying time — 1,800 hours in jet aircraft. He is one of the ten operationally active Naval aviation/flight surgeons currently on active duty.

The Navy's astronaut-physician is married to the former Shirley Ann Good of Danville, Pa. CAPT Kerwin met his future wife while he was a senior medical student at Northwestern University Medical School. Mrs. Kerwin was a nursing supervisor at the teaching hospital. His wife feels that her husband would have made an excellent pediatrician, an earlier aspiration of the astronaut, since he is so good with children. The couple has three children, aged 11, 7, and 5 years.

EFFECTS OF EXTENDED FLIGHT

The Skylab-2 mission gave the astronauts the opportunity to study problems in operational, scientific, and technological tasks, to perform effectively and safely in the earth's first orbiting space station. The primary goal was to collect biomedical data on the effects of long-duration space flight, especially to explore physiological adaptation. After the rendezvous with Skylab 2, CAPT Kerwin and the other two team members

PRESENTING MEMENTO.—CAPT J. Kerwin, MC, USN (left) presented the Naval flight surgeon wings that accompanied him in Skylab 2 to RADM Oscar Gray, Jr., MC, USN (right), CO, Nav Aerosp and Reg Med Center, Pensacola, Fla., on 10 Dec 1973. RADM Gray presented the wings to CAPT Robert C. McDonough, MC, USN, CO, Nav Aerosp Med Institute, for display in the Student Flight Surgeons' Readyroom. The first physician in space, CAPT Kerwin completed the six-month course for student flight surgeons in Pensacola on 16 Dec 1958.—PAO, Nav Aerosp & Reg Med Center, Pensacola, Fla.

faced the priority task of repairing the overheated station to save the 85-ton, $294- million project. Otherwise, the program would have been a total loss.

TROUBLESOME MISSION

Skylab 2 was plagued with trouble from the time of the initial launching. The mission had numerous malfunctions, encountering such problems as dead batteries, missing thermal shielding, failure of two undeployed solar power wings, and jammed scientific instruments. Working in the Skylab astronaut team, CAPT Kerwin was instrumental in resolving the complex heat, power, and other intricate problems.

WORKABLE SOLUTIONS SAVE PROGRAM

In the end, a workable sun-shield device for cooling the earth-orbiting laboratory was improvised, the result of frontier efforts of the astronaut crew. The improvised canopy device provided sufficient shade to decrease the temperature from an extreme of about 125° F., to a level commensurate with livable conditions. The jammed workshop solar power arrays, to convert sunlight to electricity, cut the spacecraft's power supply in half. Four other power arrays were successfully deployed. Thanks to the ingenuity of the astronauts, nearly all of the mission's scientific and biomedical objectives were accomplished.

MEETING OF THE MINDS.—Astronaut-physician CAPT Joseph Kerwin, MC, USN (right) answers questions for Dr. Hermann J. Schaefer (center), and Dr. Dietrich E. Beischer (left), following his lecture at the Naval Aerospace Medical Institute in Pensacola, Fla., on 10 Dec 1973. The veteran scientists came to Pensacola from Germany in 1948, and both men have since made significant contributions to the Nation's space program. (Photo by Bob Barrett; PAO, Nav Aerosp & Reg Med Center, Pensacola, Fla.)

FIRSTS OF THEIR KIND.—The first physician-astronaut, CAPT Joseph Kerwin, MC, USN (right), met the first Navy lady physician recruited from civilian life for flight surgeon training, LT Jane O. McWilliams, MC, USN (left) in Pensacola on 10 Dec 1973. Dr. Kerwin addressed the physiology of space flight before staff members and students at the Naval Aerospace Medical Institute. Dr. Kerwin had completed the course in flight-surgeon training on 16 Dec 1958, while Dr. McWilliams recently completed it on 20 Dec 1973. During this lecture tour, CAPT Kerwin and staff physician Dr. Ashton Graybiel, whom the physician-astronaut labeled the number-one expert on motion sickness, spent much time in consultation and collaboration that should benefit Skylab and other astronauts. (Photo by Bob Barrett; PAO, Nav Aerosp & Reg Med Center, Pensacola, Fla.)

SPACE-FLIGHT RECORD

On 18 Jun 1973, the Skylab-2 all-Navy crew broke the space-flight record of the Soviet Soyuz-11 flight of 570 hours and 23 minutes, set in June 1971. On the departure of the Skylab-2 crew from the still orbiting space vehicle on 22 Jun 1973, the station was in excellent condition for the continuation of the four-stage program. Since that date, the Skylab-3 crew has set a new space-endurance record — 59½ days (28 Jul 1973-25 Sep 1973). The third and final visit to the space station, intended to last 85 days, was launched on 16 Nov 1973. Skylab-4 will be America's last manned space flight, until a joint U.S.–Russian mission occurs which is scheduled for mid-1975.—*Above information compiled by Mr. Nicholas Yanowsky, BUMED Code 71D, Washington, D.C.*

Report on AMSUS — 80th Annual Meeting

The Association of Military Surgeons of the U.S. (AMSUS), The Society of the Federal Medical Agencies, conducted its 80th annual meeting on 25-28 Nov 1973 at the Sheraton Park Hotel in Washington, D.C. Under the Presiding President LT GEN Richard R. Taylor, MC, USA, Surgeon General of the U.S. Army, medical department officers and civilians of the Armed Forces, Veterans Administration, and Public Health Service participated in a successful program emphasizing the theme "Federal Medical Prospectives for Peace."

General Chairman for the Meeting was MGEN Robert Bernstein, MC, USA assisted by COL Francis C. Cadigan, MC, USA. Chairman of the Program Committee was BGEN Surindar N. Bhaskar, DC, USA assisted by COL Frederick C. Biehusen, MC, USA.

CAPT CHRISTY HONORED.—VADM D.L. Custis, MC, USN (left), Navy Surgeon General and President-elect of AMSUS, presented The Joel T. Boone Award to CAPT Ralph L. Christy, MC, USN (Ret.), as the Representative (far right) of Ciba-Geigy Corp. (which sponsors the award) added his congratulations. (Photo by courtesy of Walter Reed Army Medical Center)

CAPT OCHS LAUDED.—VADM D.L. Custis, MC, USN (left), Navy Surgeon General and President-elect of AMSUS, presented The Gorgas Medal to CAPT Charles W. Ochs, MC, USN (center). Sponsor for the award, Wyeth Laboratories took notice of the esteemed recipient who was congratulated by the Wyeth Lab Representative, Mr. Stan Nash (right). (Photo by courtesy of the Walter Reed Army Medical Center)

The Society of the Federal Medical Agencies is devoted to the advancement of all aspects of Federal medicine: professional, administrative, and health-care supporters within the Federal medical agencies, including the Uniformed Services reserves. It was organized in 1891 and chartered by Act of Congress in 1903. Its annual meetings bring together the leaders and practitioners in all aspects of Federal medicine. Membership in the Association is open to all health-services officers and civilians (GS-9 and above) of the five Federal Medical Services, including physicians, dentists, nurses, medical administrators, pharmacists, veterinarians, and medical specialists.

The President-elect Navy Surgeon General VADM

Donald L. Custis, MC, USN welcomed the participants, advocating triservice cooperation in dealing with common problems for which solutions are now evolving from a creative soil for new ideas. "For military medicine, today, there *is* no peace," VADM Custis charged. His words found their mark:

"It is not *enough*, that we stand tall in our record of combat medical care, and in our past contributions to medical knowledge. It is not enough that *we* know the manifest quality of our patient care in hospitals, ships, and operational stations. It is not enough to observe the productivity of our academic and research efforts. We must now prove our cost effectiveness; obtain the resources to compete in an all-volunteer environment; create the incentives for our military health professionals to serve their country and their patients with pride and satisfaction, and; refine a system to provide for its own continuous self renewal — the prototype, balanced, corporate health care delivery system of which we are so rightly proud — a system for all others to emulate."

The Secretary of the Army, The Honorable Howard H. Callaway delivered the Keynote Address, and BGEN Thomas J. Whelan, MC, USA (Ret.) delivered the Sustaining Membership Lecture.

In recognition of his outstanding service to AMSUS, CAPT Ralph Lawrence Christy, MC, USN (Ret.) received The Joel T. Boone Award. Through personal dedication and unselfish devotion to duty as a member of numerous Navy and Department of Defense task groups, he has contributed greatly to improve the Federal Medical Services. Among the many bills, studies, and programs to which CAPT Christy was a major contributor were: The Career Incentive Bill for Medical and Dental Officers; Medical Care for Dependents of Members of the Armed Forces (MEDICARE and its successor, CHAMPUS); H.R. 2, the Uniformed Services Health Professions Revitalization Act; the Joint DoD-HEW Report of Reduced Military Health Care Personnel Requirements; The Survivor Benefits Bill; Continuation Pay for Medical Officers; The Uniformed Services Special Pay Act of 1972 (Medical), and; many other Navy and DoD task groups concerning alcoholism, medical personnel, and professional matters.

CAPT STOVER CITED.—VADM D.L. Custis, MC, USN (left) presented The Major Gary Wratten Award to CAPT John H. Stover, Jr., MC, USN (center), as LTCOL Neal (Ret.), the sponsoring Garrett Corp. Representative, added his congratulations. (Photo by courtesy of the Walter Reed Army Medical Center)

NAVY FILM AWARD.—Flanked by the Navy Surgeon General and AMSUS President-elect (left); and Army Surgeon General LTGEN Richard R. Taylor, MC, USA (right), the AMSUS presiding-President; CAPT William Cox, MC, USN (center) accepted award for the outstanding Navy film entitled "The Return of Count Spirochete." (Photo by courtesy of the Walter Reed Army Medical Center, Washington, D.C.)

Few other medical officers' accomplishments over 30 years of active service have contributed more to the improvement of the professional stature of military medicine.

CAPT Charles W. Ochs, MC, USN was the recipient of The Gorgas Medal Award. For the past 14 years, CAPT Ochs has made distinguished contributions to military preventive medicine in the field of tuberculosis control. His perceptive clinical capability and epidemiological acumen were first manifested in 1959 during an outbreak of tuberculosis aboard a Navy ship. Dr. Ochs' subsequent report of this unfortunate epidemic served as a much-needed catalyst for the review and improvement of the Navy's preventive medicine program for tuberculosis control.

CAPT Ochs has conducted exhaustive studies to evaluate the sensitivity and specificity of the tuberculin intradermal tests; his findings in these studies have been extensively utilized in further refinement of the Navy's tuberculin control program. CAPT Ochs has contributed greatly to the professional knowledge of preventive medicine by his enlightening articles in The Journal of the American Medical Association.

The present tuberculosis preventive-control program of the Navy is based largely on the findings and

recommendations of CAPT Ochs, and this program has been praised by numerous professional consultants to the various Surgeons General of the Armed Forces.

CAPT John H. Stover, Jr., MC, USN received The Major Gary Wratten Award. Through his many years of devotion and unselfish dedication to duty, CAPT Stover has contributed immeasurably to the management capabilities and the enhancement of military medicine, in all aspects of operational and amphibious-warfare responsibilities. As Research Program Manager of Shipboard, Field, and Amphibious Medicine in the Navy's Bureau of Medicine and Surgery, he initiated, guided, and directed the first modern research efforts to develop a responsive Amphibious Medical Support System. He is renowned for his accomplishments in: medical and dental support concepts for the Fleet Marine Forces, design and arrangement studies of shipboard surgical fixtures, heat acclimatization studies of troops in shipboard environments, and modernization of sea-based major casualty receiving facilities for responsive medical care in amphibious warfare.

Continuing in the footsteps of Major Gary Wratten, CAPT Stover is noted for his tireless energy in conducting feasibility demonstrations of Medical Units, Self-Contained, Transportable, commonly known as MUST Units, an indispensable aspect of modern health-care capabilities under operational conditions. For his many contributions in amphibious and operational medicine, and for his constant dedication and devotion to duty, CAPT Stover is regarded as a most fitting recipient of the Major Gary Wratten Award.

Among outstanding films selected for honor awards was the Navy animated cartoon dramatizing the medical facts about venereal disease, entitled "The Return of Count Spirochete."

It was an excellent meeting, thoroughly enjoyed by all participants. The 81st Annual Meeting of AMSUS will be held 28-31 Oct 1974, in San Diego, Calif. Start making your plans to attend — it's never too early. If you're not a member of AMSUS, better join. Now!

NEW FLIGHT SURGEON CITED

AWARD RECIPIENT.—LT Bill R. Lee, MC, USNR (right) received the Navy Surgeon General's Award from RADM Oscar Gray, Jr., MC, USN (left), CO, Naval Aerospace and Regional Medical Center, during graduation ceremonies at the Naval Aerospace Medical Institute in Pensacola, Fla., on 20 Dec 1973. The award is given in recognition of scholastic achievement, leadership, cooperation and flight aptitude during the six-month course of instruction in aerospace medicine. RADM J. Lloyd Abbot, Jr., USN, Director, Educational Development, Naval Education and Training Command, delivered the commencement address to the 23 graduating flight surgeons, among whom were the first two women flight surgeons of the Navy.

FIRST FAMILY PRACTICE CLINIC DIRECTOR PROMOTED

PROMOTION CEREMONIES.—CAPT George C. Bingham, MC, USN (center) sports new shoulder boards received during ceremonies at Nav Hosp Pensacola on 11 Dec 1973. His wife Joann and CAPT Neil V. White, MC, USN, hospital CO, attended the ceremony for Dr. Bingham, who will be the first Director of the Hospital's Family Practice Clinic. He is a graduate of the University of Minnesota Medical School, and is Board certified by the American Academy of Family Practice.

DEFECTIVE MATERIAL REPORTS

Information received in the Bureau of Medicine and Surgery indicates that activities are not reporting defective or unsatisfactory material in accordance with FLDBRBUMEDFMSOINST 6700.16C, Subject: "Reporting and Processing Defective or Unsatisfactory Medical/Dental Material." Materials to be reported are: (1) material which has been determined to be harmful or defective, to the extent that its use has caused or may cause death or illness; (2) material which is suspected of being harmful, defective, deteriorated, or otherwise unsuitable for use; and (3) equipment which is determined to be unsatisfactory because of malfunction, design, defects attributable to faulty material and/or workmanship, or performance.

Failure to report defective material in the above categories may subject patients and staff personnel to undue hazards. — Code 4, BUMED.

PILOT PROGRAM IN COMPREHENSIVE DENTISTRY

A pilot program in a discipline to be known as comprehensive dentistry will be established at the Naval Graduate Dental School in Calendar Year 1974-75. Completion of the Graduate Course in General Dentistry will be a prerequisite, and will serve as the first year of the new residency program. Since only two members of the 1973-74 Graduate Course in General Dentistry will be selected to participate in the program at the second-year level, other applications are not solicited.

The new program is being developed in response to the increasing need for dental officers who are trained to a high level of expertise in all disciplines. It is neither economically nor professionally possible to provide every naval activity with specialists in all disciplines of dentistry when the supported population is too small to keep the specialist fully occupied. Additionally, the general dentist will be rewarded with professional growth and satisfaction. The primary emphasis of this new comprehensive residency program will be on clinical practice and instruction. — Code 4, BUMED.

DENTAL INDOCTRINATION AND ORIENTATION SEMINAR

A Naval Reserve Dental Indoctrination and Orientation Seminar will be conducted in the Bureau of Medicine and Surgery, Washington, D.C., from 18 to 22 March 1974 for inactive-duty Naval Reserve dental officers residing in the Third and Sixth Naval Districts. The West Coast Seminar will be conducted at the Naval Reserve Center, Camp Decatur, San Diego, Calif., from 22 to 26 April 1974 for officers residing in the Eleventh and Thirteenth Naval Districts. Officers residing in the Eighth and Ninth Districts may attend either the BUMED or the Camp Decatur Seminar as authorized by the Commandant/COMNAR.

The purpose of these seminars is to provide indoctrination and orientation in the organization, administration, and operation of the Navy Dental Corps and to acquaint the trainee with the current concepts, policies, and trends affecting the Naval Reserve, with particular emphasis on Dental Corps Reserve programs.

All inactive-duty Ready Reserve dental officers, especially commanding officers and executive officers of dental companies, are encouraged to apply for this most important training duty. The request to attend the seminars should be in accordance with BUPERSNOTE 1571 of 2 Nov 1973. District Commandants/

COMNAR may issue orders to Naval Reserve dental officers in the Support Component, and to Naval Reserve dental company commanding officers, executive officers, or their representatives who did not attend such a seminar in Fiscal Year 1973 and who have a current mobilization billet. — Code 4, BUMED.

NEW ENLISTED ASSISTANT FOR DENTAL DIVISION

Enlisted dental personnel have a new liaison man at BUMED. He's DTCS Champ E. Ray, USN, who has been named enlisted assistant to the Assistant Chief for Dentistry and Chief of the Dental Division. Senior Chief Ray also serves as the point of contact for Master Chief Petty Officer Anderson, the Master Chief Petty Officer of the Command, Navy Medical Department.

Senior Chief Ray may be reached at:

Chief, Bureau of Medicine and Surgery
(Code 6)
Navy Department
Washington, D.C. 20372
Telephone: Autovon 294-4286
Commercial (Area Code 202) 254-4286

NAVY MEDICAL CORPS GALA AT NNMC BETHESDA, MD.

By official directive in 1970, the Navy Medical Corps now proclaims 3 March 1871 as the formal date of its birth. Although Navy surgeons had previously played a very tangible role in support of Naval forces, legislative recognition of a Navy Medical Corps by actual title was not documented until 3 March 1871.

A festive celebration will be held on Friday evening, 8 March 1973 at the Commissioned Officers Mess (Open), National Naval Medical Center, Bethesda, Md., commemorating the establishment of the Navy Medical Corps. The majority of Navy physicians in the area are expected to attend, with their ladies and guests. Other officers of the Navy Medical Department and of other military services, are invited to participate.

Chairman of the local 103rd Navy Medical Corps Anniversary Party Committee is RADM R.G. Williams, Jr., MC, USN, Commanding Officer of the National Naval Medical Center (NNMC), Bethesda, Md.; General Co-chairman is CAPT J.W. Cox, MC, USN, Commanding Officer of the Naval Medical Training Institute, NNMC, Bethesda. Subcommittee Chairmen for the event include the following Navy Medical Corps captains:

R.K. Barton, Regional Health Care Coordinator, NNMC;
D.E. Brown, Jr., Deputy CO, NNMC;
P.A. Flynn, Medical Corps Branch of the Professional Division, BUMED;
M.T. Lynch, Professional Publications Officer, BUMED;
E.B. McMahon, Director of Professional Division, BUMED;
T. Richter, CO, Naval Medical Research Institute, NNMC; and

ANNIVERSARY PARTY COMMITTEE.—Meeting to plan festivities for the Navy Medical Corps Birthday which will be held on March 8th, 1900-2400 hours at the Commissioned Officers Mess, NNMC, Bethesda, Md., are (from left to right): CAPT E.B. McMahon, MC, USN, Director of Professional Division at the Bureau of Medicine and Surgery; CAPT A.C. Wilson, MC, USN, Director of the Planning Division at the Bureau of Medicine and Surgery; CAPT J.W. Cox, MC, USN, CO, Naval Medical Training Institute, NNMC; Mae Dressel, Secretary; RADM R.G. Williams, Jr., MC, USN, CO, NNMC; CAPT R.K. Barton, Regional Health Care Coordinator, NNMC; and CAPT D.E. Brown, MC, USN, Deputy CO, NNMC.

M. Varon, Director, Armed Forces Radiobiology Institute, Bethesda, Md.

The Committee has indicated that costs will be kept to a minimum: $8.50 per person for CDRs and above; $6.50 per person for LCDRs and below, and for bona fide non-paying guests (spouses excepted). Navy physicians are urged to invite members of the Nurse, Dental, and Medical Service Corps as their personal guests.

Service dress blue uniform, or the equivalent will be worn by military gentlemen; military ladies and civilians will wear appropriate evening attire.

Those who plan to be in the Washington, D.C. area are urged to join in the festivities. For tickets please contact:

CDR J.C. Thompson, MSC, USN,
Code 3A
Bureau of Medicine and Surgery
Navy Department
Washington, D.C. 20372
Phone (202) 254-4180 or 4311 (Commercial),
294-4180 or 4311 (Autovon).

NNMC IS SITE FOR DOD UNIVERSITY

The National Naval Medical Center in Bethesda, Md., has been selected as the site of the new Uniformed Services University of the Health Sciences (USUHS). Planning and construction of permanent facilities is expected to take at least four to five years.

Establishment of the USUHS was authorized by the Uniformed Services Health Professions Act, enacted 21 Sep 1972, in order to educate individuals who hopefully will become career military members, in all of the health professions. The University eventually will become a unique DOD educational resource with capability for extensive interdisciplinary professional training leading to academic degrees. The degree of Doctor of Medicine represents the first such degree for which a curriculum is being developed. As conditions permit, appropriate degrees or certification will be conferred in dentistry, nursing, pharmacy, and allied health professions. The University will prepare physicians, dentists, pharmacists, nurses, and allied health professionals to provide optimum health care to the military, their dependents, and retirees; it will also provide leadership in future health-care delivery, through teaching and research.

The medical school to be developed by the University will undoubtedly blaze new academic trails, and will use the existing worldwide medical resources of the three military medical departments. The policies of the University will be established by a Board of Regents consisting of nine persons appointed by the President of the United States, with the advice and consent of the Senate. Current Board members are:

Mr. David Packard,
Chairman of the Board.
Palo Alto, Calif.
Former Deputy Secretary of Defense.

LTGEN Leonard D. Heaton, USA (Ret.)
Pinehurst, NC.
Retired Surgeon General, U.S. Army.

Malcolm C. Todd, M.D.
Long Beach, Calif.
Physician.

Charles E. Odegaard, Ph.D.
Seattle, Wash.
President, University of Washington.

Joseph D. Matarazzo, Ph.D.
Portland, Oreg.
Professor and Chairman,
Department of Medical Psychology,
University of Oregon Medical School.

H. Ashton Thomas, M.D.
New Orleans, La.
Physician.

Durward G. Hall, M.D.
Springfield, Mo.
Retired member, U.S. House of Representatives.

Alfred A. Marquez, M.D.
San Francisco, Calif.
Physician.

Ex-officio members are:

Richard S. Wilbur, M.D.
Washington, D.C.
Former Assistant Secretary of Defense
(Health and Environment).

LTGEN Richard R. Taylor, MC, USA.
Washington, D.C.
The Surgeon General
Department of the Army.

VADM D.L. Custis, MC, USN.
Washington, D.C.
The Surgeon General
Department of the Navy.

LTGEN Robert A. Patterson, MC, USAF.
Washington, D.C.
The Surgeon General
Department of the Air Force.

CAPT Melvin Museles, MC, USN is Executive Secretary to the Board. CAPT David Pitts, MSC, USAF is Administrative Director to the Board.

The University is required to graduate at least 100 students by 1982. It is anticipated that the first class will probably begin in 1978. Also under consideration is development of an interim facility which, conceivably, could start a small class of medical students within the next two years.

Students will be selected in accordance with procedures recommended by the Board of Regents, and prescribed by the Secretary of Defense. All candidates must demonstrate sincere motivation and dedication to a military career. Students will be commissioned officers and will serve on active duty in the pay grade of 0-1 (equivalent to Second Lieutenant in the Army and Air Force, or Ensign in the Navy), with full pay and benefits.

Graduates of the medical school will be required to serve on active duty for at least seven years after graduation, not counting time spent in internship and residency programs. Up to 20% of each class may perform other federal health duty for seven years, in lieu of service in the armed forces.

A search committee has been appointed by the Board to select key staff and faculty members. This committee will be chaired by the President of the University.

DR. CURRERI APPOINTED PRESIDENT OF USUHS

Dr. Anthony R. Curreri, an internationally recognized medical educator, has been appointed the first President of the Uniformed Services University of the Health Sciences (USUHS).

Dr. Curreri has had a long and distinguished career as a surgeon, clinical investigator, teacher, and administrator. He was born in 1909 in New York City, and earned his bachelor's, master's, and Doctor of Medicine degrees at the University of Wisconsin. He interned at Columbia and Milwaukee Children's Hospital and completed a surgical residency at University Hospitals, University of Wisconsin. He is Board certified in both general and thoracic surgery. From his appointment as an instructor in surgery in 1939, Dr. Curreri has advanced in academic surgery at the University of Wisconsin to become the Evan P. Helfaer Distinguished Professor of Surgery in 1972.

Dr. Curreri holds visiting professorships in some 16 medical schools throughout the U.S., and has served as a special consultant to medical schools in Italy, Mexico, Panama, and Venezuela.

FIRST PRESIDENT.—Dr. Anthony R. Curreri has been appointed the first President of the Uniformed Services University of the Health Sciences.

He is a member of some 26 scientific societies and associations, and has held numerous consultative positions with the U.S. Public Health Service, the Department of Defense, the Veterans Administration, the U.S. Army Medical Department, the Armed Forces Institute of Pathology, the American College of Surgeons, and the American Cancer Society.

He is on the editorial board of three scientific journals, and is the author of many scientific articles published in leading medical and surgical journals in this country and abroad. He has been accorded many honors, including the Outstanding Alumnus Award, class of 1930, University of Wisconsin; the Shahbanou of Iran Gold Medal and Lila Motley Foundation Award; and the Legion of Merit, U.S. Army. He was also decorated by the President of Italy as a Commander to the Order of Merit of the Italian Republic.

President Nixon appointed Dr. Curreri to the Board of Regents of the Uniformed Services University of the Health Sciences in May 1973, a position from which he resigned to become President of the University.

PATHOLOGY SOCIETIES HONOR DR. HARTMAN

Frank W. Hartman, M.D., of Potomac, Md., an outstanding clinical and research pathologist who made a new career in military medicine after retiring as Pathologist-in-Chief at Henry Ford Hospital in Detroit, received the annual Joint American Society of Clinical Pathologists (ASCP) — College of American Pathologists (CAP) Award for Distinguished Service to Pathology at a banquet held at the Conrad Hilton Hotel, Chicago, on 24 Oct 1973.

Dr. Hartman was honored by the ASCP and CAP, which held a week-long annual meeting at the Conrad Hilton Hotel. He was one of the founders of the College in 1947, and has served as president of both societies.

Dr. Robert C. Horn, Jr., who succeeded Dr. Hartman as Pathology Director of Henry Ford Hospital and still serves in that post, joined in the presentation as the newly elected president of the College; Dr. Jack M. Layton of Tucson, the outgoing president of the ASCP also participated. Dr. John R. Schenken of Omaha, who received the joint award in 1967 was the main speaker.

Now 83 years of age, Dr. Hartman graduated from Knox College and received his M.D. degree in 1917 from Johns Hopkins University. He served in the Medical Corps of the U.S. Navy during World War I, and at the Naval Medical School (Naval Medical Training Institute) in Washington, D.C., a post he held until 1921. After a year at the Scott and White Clinic in Temple, Tex., he moved to Henry Ford Hospital where he remained from 1922 to 1955.

Following his retirement, he became Medical Research Advisor to the Office of the Surgeon General of the U.S. Air Force in Washington from 1956 to 1968; he subsequently served from 1969 to 1970 as medical officer in the Food and Drug Administration's Bureau of Drugs.

In 1954, on the occasion of Dr. Hartman's 35th year in pathology, the Henry Ford Alumni Association sponsored a symposium presented by men who were trained or influenced in their training by Dr. Hartman, in commemoration of his many scientific, civic, and organizational activities.

In a tribute printed in *Laboratory Investigation* shortly afterwards, Dr. Schenken wrote that Dr. Hartman's "interests have been as varied as medicine itself, from development of the therapeutic use of a liquid oxygen tent to the use of a photo-electric device for determining anoxia .... He also devoted time and energy to the intangible thing called pure research."

Other areas of research in which Dr. Hartman authored numerous scientific articles include radiation nephritis, radiation carditis, treatment of experimental burns, tannic acid and hepatic necrosis, methods for sterilization of blood plasma, plasma substitutes and blood banks. He was editor of two books: "The Dynamics of Virus Infections," published in 1955 and "Hepatitis Frontiers," published in 1957.

Dr. Hartman was honored for his scientific achievements in 1944 when ASCP presented him with the Society's coveted Ward-Burdick Award. He has received a gold medal, silver medals, and a certificate of merit from the American Medical Association.

A Diplomate of the American Board of Pathology, Dr. Hartman served as Board secretary from 1936 to 1945, and is now a life-trustee of the Board. In 1956, he was president of the American Society for Experimental Pathology. During his military career, Dr. Hartman served on the U.S. Air Force Aerospace Medical Research Council from 1958 to 1968, was secretary of the Department of Defense's Interdepartmental Committee on National Blood Program Research from 1960 to 1968, and was chairman of the Joint Committee on Aviation Pathology in 1967.—PAO, the Intersociety Committee on Pathology Information, Inc., Bethesda, Md.

Frank W. Hartman, M.D., Recipient of the joint ASCP-CAP Award for Distinguished Service to Pathology.—(Photo by Intersociety Committee on Pathology Information, Bethesda, Md.)

NNMC SYMPOSIUM ON GASTROINTESTINAL NEOPLASMS

A Symposium entitled "Current Management of Gastrointestinal Neoplasms" was held at the National Naval Medical Center, Bethesda, Md., on 9-10 Nov 1973. The co-directors of the meeting were RADM William M. Lukash, MC, USN, Chairman, Gastroenterology Clinic and Research Department; and CAPT William J. Fouty, MC, USN, Chairman, Department of General Surgery. The program participants included eminent civilian consultants, along with notable members of the hospital staff.

The program was opened by CAPT D. Earl Brown, Jr., MC, USN, Director of Professional Services at the National Naval Medical Center. CAPT Brown described the objectives of the symposium and the efforts of the continuing-education program at the National Naval Medical Center. The keynote speaker of the morning was Frank J. Rauscher, Ph.D., Director of the National Cancer Institute. Dr. Rauscher indicated that gastrointestinal cancer, particularly cancer of the colon and rectum, is the most frequent major internal cancer affecting man. The government, he noted, has finally recognized that cancer is one of the country's major medical problems and has accordingly budgeted $560,000,000 toward its cure. Moreover, other funds from organizations such as the American Cancer Society have generated additional resources, so that currently $800,000,000 are provided for the solution of this gigantic health problem. Accordingly, significant research and treatment assets are being devoted to the problem of gastrointestinal malignancy. Dr. Rauscher implied that although carcinogenic factors in our environment probably play an important role in causation of gastrointestinal malignancy, they are not as obvious as is the act of smoking in the genesis of lung cancer.

MAJ Jack R. Lichtenstein, MC, USA, Head, Medical Genetics Branch, Armed Forces Institute of Pathology discussed the genetic aspects of gastrointestinal malignancy, and emphasized the high rate of malignancy in familial polyposis and Gardner's syndrome. More importantly, however, he stressed the need for proper genetic counseling in those families afflicted with these diseases. At this time, the responsibility of counseling rests with the primary physician, because of the relatively small number of geneticists available.

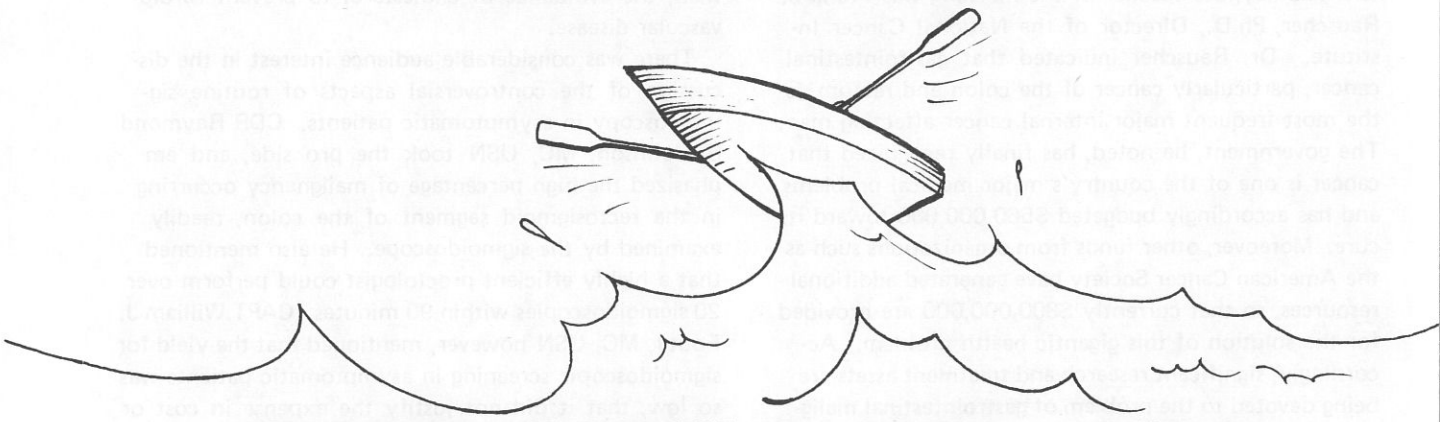
A most candid, yet highly informative, discussion on carcinogenic factors in our environment was presented by Daniel H. Connor, M.D., Chief of Geographic Pathology, Armed Forces Institute of Pathology. He contrasted the high incidence of colon-rectal cancer in our country with the low incidence in underdeveloped countries. In the United States the use of a highly refined carbohydrate diet, with its low-fiber content, is quite strikingly different from the use of a high-residue, high-fiber-content diet in underdeveloped countries. This dietary difference was shown to be directly related to the pattern of frequent bulky bowel movements characteristic of the natives of underdeveloped countries, in contrast to the chronic constipation seen so commonly in the U.S. With the potentiality of a distinct fecal carcinogen, obviously the stasis resultant from chronic constipation would place the U.S. population at a higher risk for colon-rectal cancer. The significance of this finding would suggest that the inclusion of increased bulk in our diet, to decrease the incidence of colon-rectal carcinoma might be equally as, or more important than, the avoidance of cholesterol to prevent cardiovascular disease.

There was considerable audience interest in the discussion of the controversial aspects of routine sigmoidoscopy in asymptomatic patients. CDR Raymond B. Johnson, MC, USN took the pro side, and emphasized the high percentage of malignancy occurring in the rectosigmoid segment of the colon, readily examined by the sigmoidoscope. He also mentioned that a highly efficient proctologist could perform over 20 sigmoidoscopies within 90 minutes. CAPT William J. Fouty, MC, USN however, mentioned that the yield for sigmoidoscopic screening in asymptomatic patients was so low, that it did not justify the expense in cost or physicians' time, and the discomfort to the patient. It was concluded that, in the asymptomatic patient, sigmoidoscopy and barium-enema examination should be performed at age 45, and repeated at age 50; then to be undertaken, probably at intervals of every two to three years, as long as the patient remained asymptomatic.

In general, the panels on management of gastrointestinal cancer were very well developed and triggered many interesting questions by the audience. CAPT Roger F. Milnes, MC, USN, Chief of Surgery, Naval Hospital, San Diego and currently Chief of Professional Services at the hospital, participated in all three panels. His visit was sponsored by the visiting-consultant program, coordinated by the Bureau of Medicine and Surgery. His considerable experience and comprehensive expertise in this field were clearly evident to members of the audience, and it was felt that this type of exchange within the Navy was most efficacious. — RADM William M. Lukash, MC, USN; Chief, Gastroenterology Service, NNMC, Bethesda, Md.

MEDICAL CORPS
103rd
BIRTHDAY BALL

"DON'T MISS THE BOAT"



FRIDAY, MARCH 8, 1900 - 2400

CASH BAR, BUFFET, DANCING
COMMISSIONED OFFICERS' OPEN MESS
NATIONAL NAVAL MEDICAL CENTER, BETHESDA, MD.
GENTLEMEN, SERVICE DRESS BLUE UNIF. OR EQUIVALENT
LADIES & CIVILIANS, APPROPRIATE CIVILIAN ATTIRE

TICKETS $8.50 per person Grade 0-5 and Above
$6.50 per person Grade 0-4 and Below, Guests

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UNITED STATES NAVY MEDICINE

CORRESPONDENCE AND CONTRIBUTIONS from the field are welcomed and will be published as space permits, subject to editing and possible abridgment. All material should be submitted to the Editor, *U.S. NAVY MEDICINE,* Code 18, Bureau of Medicine and Surgery, Washington, D.C. 20372.

NOTICES should be received not later than the third day of the month preceding the desired month of publication.

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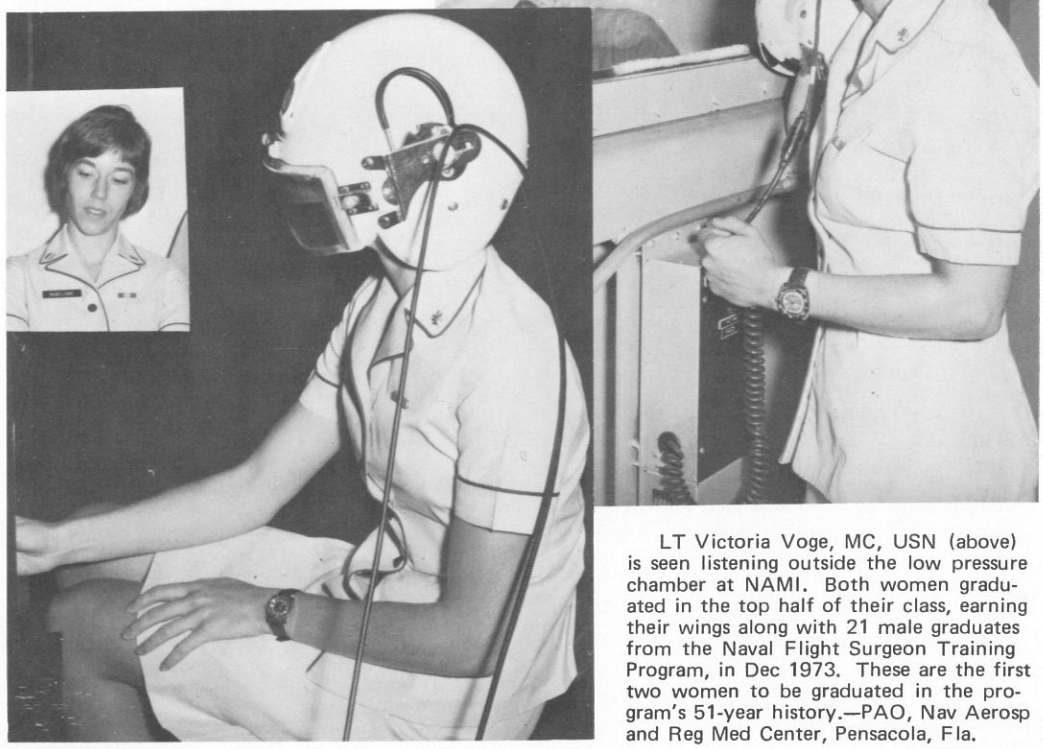

FIRST LADY FLIGHT SURGEONS.—LT Jane O. McWilliams, MC, USN (below) is seen learning about flash blindness in the Aerospace Physiology Dept. at the Nav Aerosp Med Institute (NAMI), Pensacola, Fla.

LT Victoria Voge, MC, USN (above) is seen listening outside the low pressure chamber at NAMI. Both women graduated in the top half of their class, earning their wings along with 21 male graduates from the Naval Flight Surgeon Training Program, in Dec 1973. These are the first two women to be graduated in the program's 51-year history.—PAO, Nav Aerosp and Reg Med Center, Pensacola, Fla.